American Gas Association MONTHLY

Study Natural Gas War Demand

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Gas Conservation Saves Oil

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Women Commandos on the Air

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Wartime Accounting Practice

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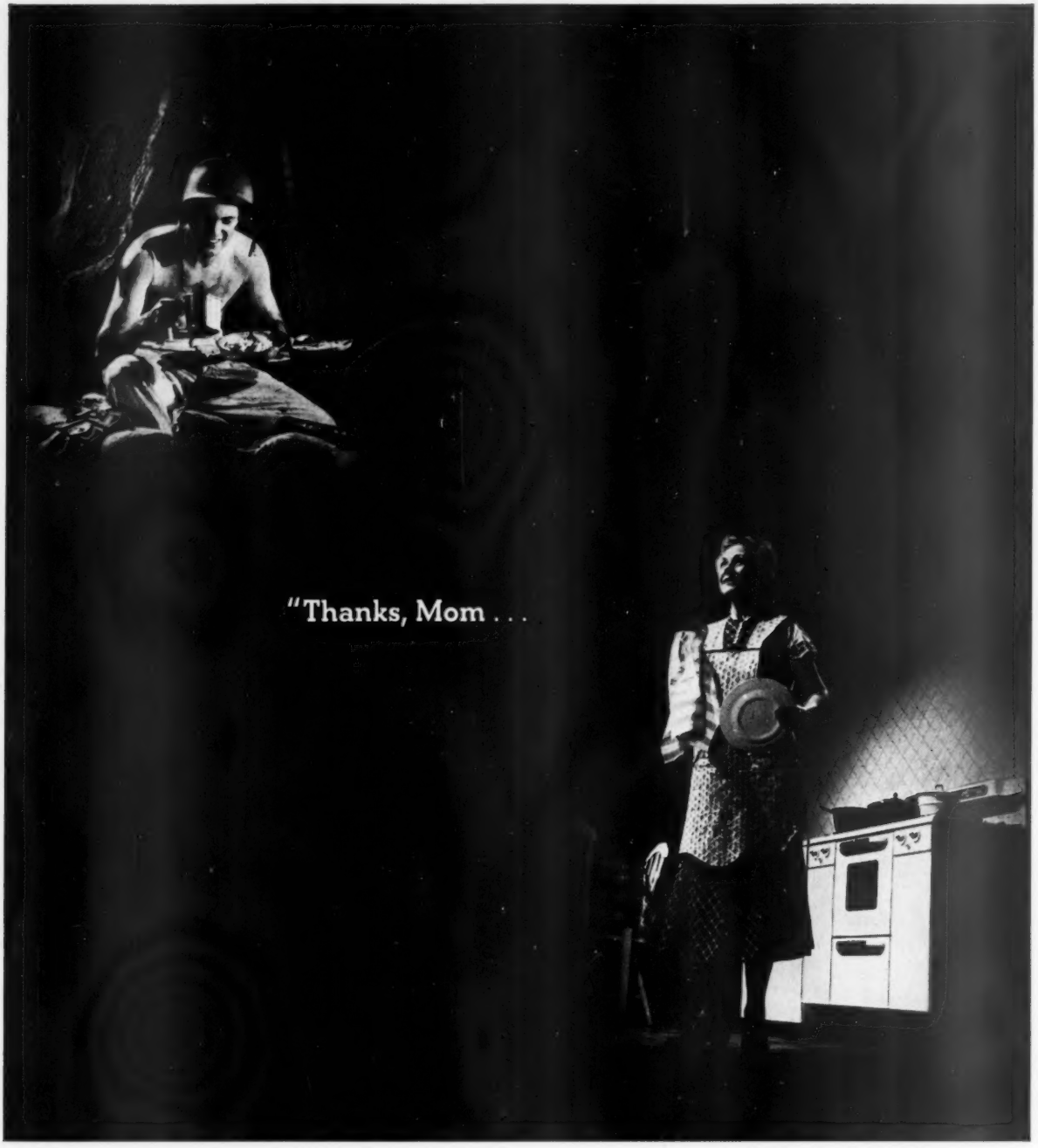
Distribution Engineers Meet

June 1943

VOLUME XXV NUMBER 6



"Thanks for all the things you do every day that will help bring me and the rest of the boys home sooner . . . When I see men out here giving their all for Victory, it's easy for *me* to understand why it's so important for the folks back home to sacrifice and do without. But *you,* Mom, are doing a swell job even though you're far away from this mess . . . and that makes me specially proud. Thanks for saving fats and greases . . . I hear them go off with an almighty bang every day. Thanks for saving food . . . I'm eating some of it now. Thanks for saving Gas at home . . . God knows we need the tanks and guns and planes that are produced with Gas. Honest, Mom, I think they should give medals to women like you who are fighting the good fight for freedom back on the home front!"

YOUR GAS COMPANY IS READY TO HELP YOU. If you are one of the 85,000,000 Americans who depend on Gas for cooking . . . feel free at all times to ask your Gas Company for the latest cooking and nutrition information. We know you want to do your part in saving precious vitamins, food, and fuel. But we realize the tremendous problems you face today . . . with shortages, restrictions and substitutes. We'd like to help you make the best of the situation in every way possible!

AMERICAN GAS ASSOCIATION.

GAS *is vital to war production . . . use it wisely!*

Buy War Bonds today—save for the Certified Performance Gas range of tomorrow

The above advertisement has been selected by OWI and the Advertising Council as one of the 50 ads best promoting the civilian war effort of America. *See story on page 238*

American Gas Association MONTHLY

CONTENTS FOR JUNE 1943

A high-powered battery of the best talent in the gas industry fired round after round into the industry's most knotty war problems at a series of meetings spaced over the last six weeks. As a result, Industry Intelligence reports that the gas industry is advancing on all fronts and the atmosphere has been clarified for the most crucial months of the war. . . . This issue carries detailed summaries of the Natural Gas, Accounting, Distribution, and Motor Vehicle Conferences. Neither time nor space permitted a report on the Production and Chemical Conference but this vital activity will receive attention in the July-August issue. . . . Of special importance is the symposium covering the effect of Government war orders on the transmission, distribution and production of natural gas. Messrs. Ulrich, Hartson and Potter make valuable contributions toward complete understanding and full cooperation in carrying out these orders. . . . What one utility can accomplish on the home front with an imaginative, well-directed radio program is told in Mr. Warden's highly interesting story of "Women Commandos." . . . For thoughtful post-war planners, Dr. Fieldner's analysis of fuel supplies and economics offers much solid substance.

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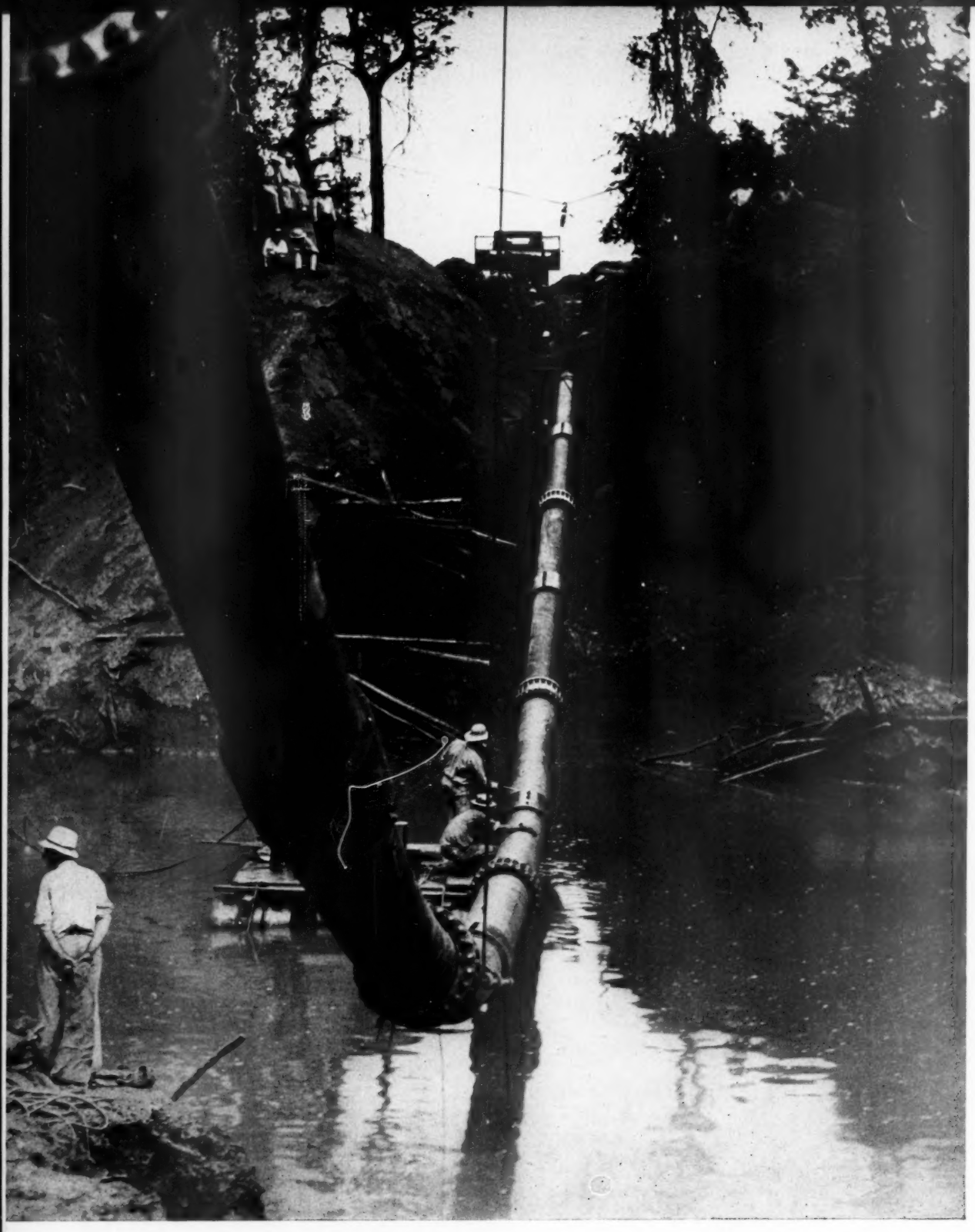

Construction crew of the Lone Star Gas Company laying a pipeline across a narrow stream, thus augmenting gas service to war industries and communities in Texas and Oklahoma.

American Gas Association MONTHLY

JAMES M. BEALL, *Editor*

WAR DEMANDS
...Keynote of Natural Gas Management Conference

AT a one-day Management Conference replacing the normal four-day annual convention of the Natural Gas Section, American Gas Association, the wartime operating problems of the natural gas industry were reviewed and steps taken to meet all war demands for this essential fuel. Speakers from the War Production Board and the Petroleum Administration for War teamed up with industry representatives to clarify past action and map steps vital to the war effort. Several hundred gas company executives participated in the conference which took place April 28 at the Gibson Hotel, Cincinnati, Ohio, under the chairmanship of Burt R. Bay, chairman, Natural Gas Section, and president, Northern Natural Gas Company, Omaha, Nebraska.

High spot of the meeting was the appearance of J. A. Krug, director of the Office of War Utilities, WPB, who gave a forthright picture of the over-all fuel situation. Speaking of critical fuel shortages to be expected next winter, Mr. Krug said: "The problem is one of obtaining necessary materials which are of a critical nature. We have to think of such projects as pipe lines in terms of what they represent in tanks, bombs and other munitions of war.

"I doubt if 3,000,000,000,000 cubic feet of natural gas a year, the current rate of consumption, will be sufficient. Not all war industries are now up to their full production capacities, but they will be by next winter. Fuel oil and coal supplies are bound to be tighter. The tremendous increase in war production will make it impossible for industry to switch as readily as it has before to other fuels."

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He pointed out that in some areas coal supplies would be more accessible, in others oil or gas, and said the solution was for industry and homes alike in each area to rely on whichever type of fuel was available.

Stressing the vital importance of timing, Mr. Krug said that new construction must be deferred until the last possible moment. As an example, he stated that in the past two years, with few exceptions, natural gas pipe line projects calling for 750,000 tons of steel had been deferred. In his opinion construction of a major gas pipe line from Texas to the Appalachian region "seems impossible this year."

The gas industry's conservation campaign last winter was a "splendid help," Mr. Krug declared, and should be continued. This type of program must be adopted by all other industries who have similar problems of supply, he asserted, pointing out that the gas industry had set an outstanding example in this respect.

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While emphasizing the necessity for pooling of resources, interconnection of pipe lines, and various government limitations, regardless of competitive advantage, Mr. Krug expressed faith in individual enterprise, declaring that after the war industry could return to former practice. He described the natural gas industry as "basically competitive rather than monopolistic." In conclusion he referred to the practical cooperation between the WPB and the Petroleum Administration who have solved problems of joint responsibility with great success.

Speaking for the Petroleum Administration for War, E. Holley Poe described the operation of the Natural Gas and Natural Gasoline Division of which he is director. He pointed out how this division, within the framework of such orders as PAO 11, is discharging its basic responsibility; namely, assuring the availability of necessary quantities of natural gas and associated hydrocarbons for war purposes with a minimum use of scarce materials.

Explaining that transmission line capacity serves as a brake upon gas production and gas well drilling, Mr. Poe laid down the principle that "new wells should be drilled only in response to new demands for which adequate pipe line capacity exists." He illustrated this principle with specific examples and elaborated on the problems faced in the five natural gas coordinating districts.

Important achievements of the natural gas industry in the first sixteen months of war were cited by Mr. Poe as follows: conversion of the Stanpac line between Kettleman Hills in San Francisco; a similar conversion of the 150-mile United Gas line between Refugio and Houston, Texas; utilization of existing facilities in gas fields and in the construction of pipe lines, the latter to the extent that one-third of the total line laid in 1942 was picked up reconditioned and relocated; the unselfish pooling of dwindling power material and manpower resources; the establishment of large storage reservoirs in Los Angeles Basin and elsewhere; the effort to relieve the critical District 1 situation, with two-thirds of the gas-line mileage laid in 1942 having that as its goal; the efforts toward conservation; the expanded program for utilizing natural gas and natural gasoline constituents and by-products in the 100-octane program, the explosives program, and the synthetic rubber program.

Mr. Poe also presented valuable information on the manpower situation in the natural gas industry.

Collaboration of the natural gas industry and the government agencies in Washington has been most successful in enabling the industry to keep ahead of expanding war demands, Arthur F. Bridge, president, American Gas Association, and vice-president, Southern Counties Gas Co., Los Angeles, told the conference. "It has been our good fortune," he said, "that Washington early recognized the essential character of our industry and, realizing that lack of adequate gas supplies would cripple war production, imposed the necessary load restrictions in time to prevent such crises."

Referring specifically to Limitation Order L-31, Mr. Bridge said: "It provides an effective means of minimizing the addition of on-peak firm loads, which control is particularly important in areas where critical shortages exist or might otherwise develop. The section prescribing that alternate fuel standby equipment be installed for new industrial gas loads has been especially valuable, and this is a requirement that the industry would have been unable to enforce in war plants without authority from WPB."

Approximately 25% of current deliveries of natural gas is utilized in the fabrication of implements of war, Mr. Bridge revealed. It is also being employed extensively as a basic raw material in the manufacture of various war products, including explosives, he said.

Alexander Forward, managing director, American Gas Association, congratulated the men in the industry who "are performing herculean service of incalculable value to our country in its time of national peril." Natural gas, he said stands among the few top rank sources of national strength in the war effort.

Current problems of the natural gas industry under war conditions were ably reviewed in the address of Chairman Bay who struck the keynote of the conference. His remarks, which were published in full in the last issue of the MONTHLY, constitute a major contribution to the industry's war record.

A valuable feature of this session was a three-cornered discussion of the effect of government regulations of the natural gas industry from the production, transmission and distribution viewpoints, which is reproduced elsewhere in this issue. Contributing to this symposium were: L. T. Potter, chairman, Production Committee, Natural Gas Section, and chief production engineer, Lone Star Gas Co., Dallas, Texas; R. H. Ulrich, chairman, Transmission Committee, Natural Gas Section, and vice-president, Southern Natural Gas Co., Birmingham, Ala.; and D. P. Hartson, vice-president, Equitable Gas Co., Pittsburgh, Pa.

R. E. Wertz, vice-chairman, Natural Gas Section, and president, Amarillo Gas Co., Amarillo, Texas, presided at the afternoon session which opened with a resumé of the activities of the A.G.A. Committee on War Activities by Ernest R. Acker, chairman. Mr. Acker's report, bringing the industry up-to-date on this vital work, appears elsewhere in this issue.

The many ramifications of the Natural Gas Act and their effect on the natural gas industry were analyzed in a notable paper by Marshall Newcomb, assistant general attorney, Lone Star Gas Co., Dallas, Texas. Pointing out that the Act provided a far more rigid and comprehensive type of regulation than most natural gas companies had theretofore experienced, Mr. New-

Headliners at the Natural Gas Management Conference—left to right: E. Holley Poe, director, Natural Gas and Natural Gasoline Section, Petroleum Administration for War; Alexander Forward, managing director, American Gas Association; Burt R. Bay, chairman, A. G. A. Natural Gas Section; Arthur F. Bridge, president, American Gas Association; R. E. Wertz, vice-chairman, Natural Gas Section; Julian L. Foster, Dallas; J. French Robinson, Cleveland, past-chairman, Natural Gas Section, and H. J. Carson, Omaha

comb said that "the affected companies have shown a spirit of compliance with the requirements of the Act as readily and efficiently as possible."

Relating the administration of the Act since its inception more than four years ago, Mr. Newcomb reviewed the Federal Power Commission's order, rules and applications and the construction which it and the courts have given it. He described important decisions rendered with respect to the jurisdiction of the Commission under the act (a) to control and fix rates and charges, (b) to regulate and determine the cost of production or transportation of natural gas (c) to regulate the construction and extension of pipe lines and other facilities and the abandonment of service, and (d) to prescribe a system of accounts and require the classification of accounts and property in accordance therewith.

Left—E. J. Boothby, Washington, chairman, A. G. A. Committee on Domestic Gas Research. Right—J. A. Krug, director, Office of War Utilities, War Production Board, Washington

Investment characteristics of the natural gas industry with particular reference to pipe line companies, were analyzed by Paul B. Coffman, vice-president, Standard & Poor's Corporation, New York, N. Y. Pointing out that the natural gas industry was an integral part of general business, he said that the marketed production of natural gas generally follows the trend of industrial activity. He traced natural gas developments during the war period in recent years and told how investors classify various branches of the utility industry.

Forecasting great industrial activity after the war, Mr. Coffman declared that the natural gas industry will participate in this activity. Many new pipe lines will be built and natural gas will be served in new territories, he said, but warned that such growth and expansion will be closely scrutinized and regulated. "Nevertheless," he added, "this will take place and I think there will be reasonable profit in it."

The conference closed with an informative paper on "The Future of Natural Gas and Its Derivatives" by K. S. Adams, president, Phillips Petroleum Co., Bartlesville, Okla., which was published in the last issue of the MONTHLY. After discussing chemical derivatives and new technological processes utilizing natural gas as a raw material, Mr. Adams concluded:

"We believe that natural gas and its derivatives have a great and bountiful future. The reserves are plentiful for years to come. The many new developments of derivatives are permitting the natural gas producers to obtain a market for the heavier fractions without appreciable effect on the amount of gas now available for sale as a fuel. There are many new and improved uses of natural gas as a fuel in the making; undoubtedly, more will be developed. The natural gas industry should move forward with confidence."

A. G. A. Annual Meeting To Be Held in St. Louis

THE Twenty-Fifth Annual Meeting of the American Gas Association will be held at the Jefferson Hotel in St. Louis, on Monday, Tuesday and Wednesday, October 11, 12 and 13, 1943.

St. Louis was selected by the Executive Board of the Association as the city nearest the center of Association membership affording adequate accommodations, resulting in conservation of time and travel.

It is expected that the program will be devoted entirely to discussion of war and postwar problems.

H. C. Cooper, Pittsburgh, and H. O. Loebell, New York

D. P. Hartson, Pittsburgh, and D. B. Beecher, Pittsburgh

Lester J. Eck, Minneapolis, and R. J. Canniff, Evansville

F. A. Lydecker, Newark, and J. A. Clark, Clarksburg, W. Va.

J. A. Brown, New York, and Honoria B. Moomaw, New York

Gas Industry's "Thanks Mom" Ad Wins National Citation

THE gas industry's national magazine ad "Thanks Mom" (see inside front cover) has been selected by the Office of War Information and the Advertising Council as one of 50 outstanding advertisements which has helped the cause of civilian mobilization. The June issue of *Advertising & Selling* will contain a special bound-in supplement containing reproductions of the 50 advertisements.

The "Thanks Mom" ad appeared in the *Saturday Evening Post* for March 20, *Life* for March 22 and *Collier's* for March 27. Immediately following these appearances, the Committee on National Advertising and the advertising agency, McCann-Erickson, Inc., were the recipients of many congratulatory messages. The following are typical of the character of comment made:

A doctor in Sherbrooke, Quebec, wrote, "The masterpiece of thought and attractiveness in the American Gas Association's advertisement has provoked much favorable comment in this community. It is difficult to refrain from expressing to you and the artist, its splendid message. Leaving out the commercial side entirely, there is something that has appealed to mothers. Whether the stove be gas or a primitive box variety, there is something deeper that has struck the hearts beyond expression. Comments of this description may be routine, but not from this vicinity. There is always the wastepaper basket."

Called a Masterpiece

The head of a manufacturing firm in Rhode Island wrote, "I think the illustration in that advertisement is about as eloquent an argument for sacrifices on the home front as I have seen for a long time." A housewife in Chicago commented, "Your advertisement which I took from a recent issue of *Life* impressed me to the extent that I have been almost haunted by a feeling it should be given greater wings than it had even in *Life*. It is certainly a masterpiece and I cannot forget it."

From Oakland, California, an insurance executive had this to say, "I would like a copy of the picture appearing in your ad in the *Post* of March 20 to frame and hang in my office as a further reminder to us left at our desks that there is a war on."

Editorializing on the subject of wartime advertising, F. C. Kendall, Editor of *Advertising & Selling*, has the following to say in the June issue of that magazine:

"What is wartime advertising? Is it an advertisement that announces receipt of an Army-Navy 'E' award? Is it an advertisement that relates proudly that a company is turning out guns and tanks and planes? Is it an advertisement that promotes the sale of war bonds? Is it an advertisement that explains point rationing? Is it an advertisement that apologizes for dealers' inability to stock merchandise?

"The answer has emerged with reasonable clarity. A wartime advertisement is one or several of these things. A wartime advertisement is one that informs and inspires the people on the home front. It is an advertisement that contributes to the readjustment of our whole pattern of living. But, above all, it is an advertisement that promotes some phase of an essential, government-designated home front campaign.

"The Office of War Information is charged with the responsibility of specifying informational needs, setting down a basic platform for each campaign, and coordinating the efforts of all other government departments. The Advertising Council works with the OWI and the other agencies to interpret these needs in terms of advertising action, and to bring the information to advertisers. From that point on the responsibility for dramatizing the problem and making available space and time to carry the story to the public rests on advertisers themselves.

"That advertisers are eager to assume this responsibility is reflected in the outstanding advertisements gathered in the June issue of *Advertising & Selling*. These specimens run the whole gamut of home front war information. They shed light on the nature of the enemy; they guide us in reshaping our daily living, eating and buying habits; they offer us opportunities to participate in essential wartime civilian services. They inform us and inspire us."

New Gas Range Clothes Drier Developed at Brooklyn Union

AN ingenious new development in gas utilization is a domestic clothes drier which uses the top burners of a gas range as the source of heat and air movement. Developed by Alva L. Palmer, engineer in charge of appliance testing and development, The Brooklyn Union Gas Company, it is designed primarily to take care of incidental drying rather than the weekly wash —although the large model has 23 feet of hanging space.

A working model of the new gas range drier

It consists of a shallow cabinet, seven inches deep, hung on the wall space, over and in back of the range. When not in use, its appearance is that of an ordinary kitchen cabinet. It does not interfere with top burner or oven cooking. In fact, drying can be readily done by the waste heat from top burner cooking operations. Three units, varying in width from 20″ to 36″, have been built.

When in use, the two doors are swung outward to a position at 90° to the wall. A large baffle, which is hinged into the cabinet, is then brought forward and down to a horizontal position, where it is supported by suitable catches on the bottom of the two doors, about 12″ above the cooking top. This baffle extends to the front of the range and covers the entire cooking top.

Suitable clothes rods hang inside the cabinet and are raised forward to a horizontal position about two feet above the heat baffle and three feet above the top burners. One or two of the front top burners are used at one-half of their maximum consumption. Rear burners are not used.

Drying is unusually fast, taking fifteen to twenty minutes for average fabrics. This is accomplished by the movement of large volumes of air over the fabrics at only a few degrees temperature over the room air. Drying experts state that this is the ideal condition for proper drying.

Its construction is simple in the extreme, involving but three parts—a shallow cabinet, hanging rods, and a heat-distributing baffle. There are no burners, no gas connection, no controls, no electric or flue connections. The cost of manufacture will be very low. The drier can be installed in new or existing kitchens, regardless of size or floor space, and at no greater cost or effort than any other wall-type kitchen cabinet.

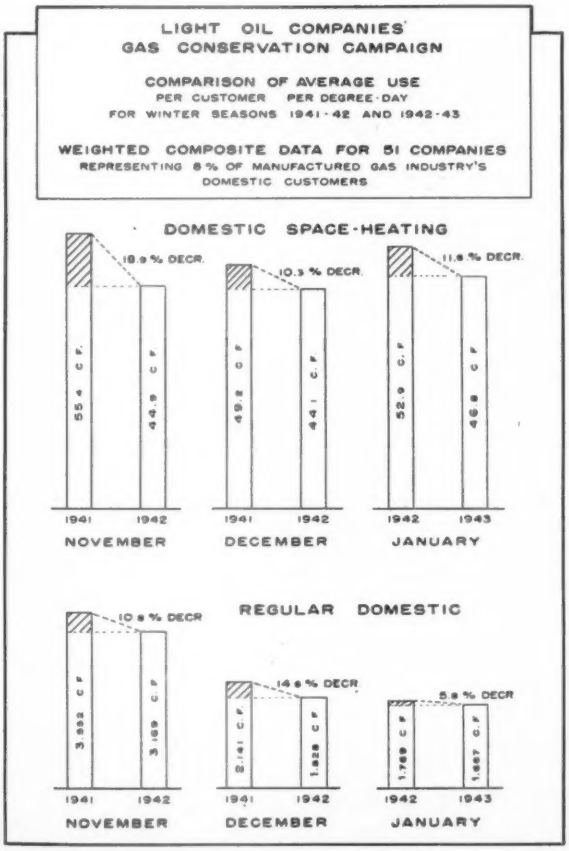
Gas Conservation Program Saves Large Quantity of Oil

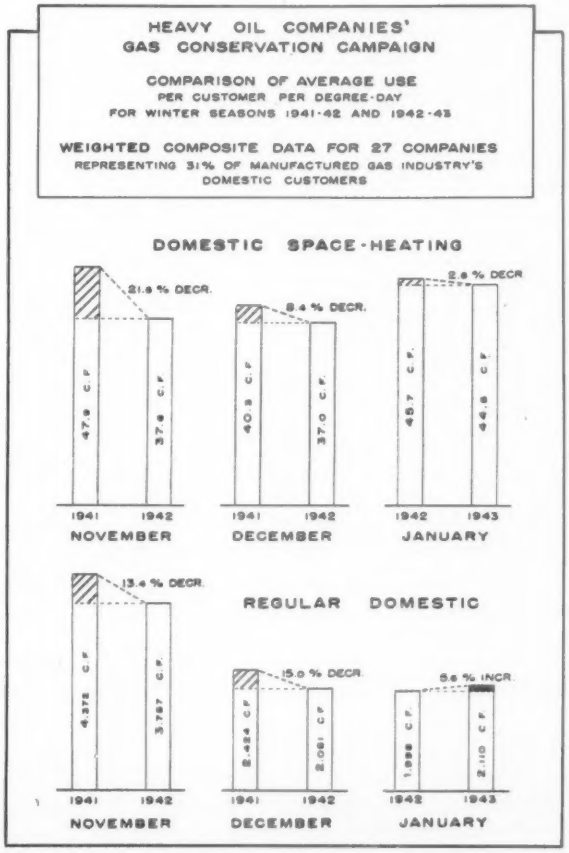
CONCRETE evidence of the effectiveness of the gas industry's conservation program last Winter, specifically as it refers to the manufactured gas branch of the business, is contained in a study released May 17 by Ernest R. Acker, chairman of the American Gas Association's Committee on War Activities. The effect on the operations of a representative group of companies using light and heavy oil is shown for the months of November, December and January. No survey has yet been made of natural gas conservation.

As pointed out by Mr. Acker, the reduced consumption per degree-day of the domestic and house-heating customers of these 78 companies represents a total saving of approximately 12,000,000 gallons of enrichment oil during that period. The maximum day send-out of these companies was some 40,000,000 cubic feet less than their total anticipated maximum day send-out. It is further pointed out that additional savings were effected during February and March and that data from the remainder of the water gas producing companies would give further proof of the effectiveness of this program.

This campaign was strongly endorsed April 20 by J. A. Krug, director of the Office of War Utilities, War Production Board, in a letter to the American Gas Association. Mr. Krug said in part:

"The intensive advertising campaign to promote conservation carried on by your Association and the gas industry during the past winter has been a splendid job. . . . . An especially patriotic contribution was made by the manufactured gas companies in the critical fuel oil shortage areas by their appeals to consumers to reduce gas consumption to save fuel. This action was taken notwithstanding the fact





that many of the companies concerned had more than adequate capacity to meet all demands."

On behalf of the Committee on War Activities, Mr. Acker urged continuation of an aggressive gas conservation program, and thanked all companies who supplied data for the accompanying study.

Character of Campaign

The companies involved resorted to newspaper ads and news stories, radio announcements, leaflets and letters to customers, personal contacts, home service classes and warnings on recipe sheets, bill boards, window displays, truck posters, tags for home thermostats and on appliances in the kitchen.

EFFECT OF GAS CONSERVATION CAMPAIGN

COMPANIES IN SURVEY

51—Light Oil Manufactured Gas Companies
27—Heavy Oil Manufactured Gas Companies

CUSTOMERS SERVED AND PER CENT TO TOTAL MANUFACTURED GAS DOMESTIC CUSTOMERS

	Light Oil		*Heavy Oil*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Domestic	785,615	8.2%	3,076,373	32.0%	3,861,988	40.2%
Space Heating	14,380	3.9	62,484	17.1	76,864	21.1
Total	799,995	8.0%	3,138,857	31.5%	3,938,852	39.5%

PER CENT SAVINGS IN GAS USED

	Light Oil Companies		*Heavy Oil Companies*	
Period	*Regular Domestic*	*Domestic Space Heating*	*Regular Domestic*	*Domestic Space Heating*
Nov. (42/41)	10.8%	18.9%	13.4%	21.5%
Dec. (42/41)	14.6	10.3	15.0	8.4
Jan. (43/42)	5.8	11.6	5.6 (Inc.)	2.8

INDICATED VOLUME OF GAS SAVED (Adjusted for degree day differences)

MCF Saved

	Light Oil Companies			*Heavy Oil Companies*		
Period	*Regular Domestic*	*Space Heating*	*Total*	*Regular Domestic*	*Space Heating*	*Total*
Nov. (42/41)	183,000	97,000	280,000	994,000	399,000	1,393,000
Dec. (42/41)	263,000	83,000	346,000	1,149,000	243,000	1,392,000
Jan. (43/42)	98,000	123,000	221,000	(353,000)*	95,000	(258,000)*
MCF Saved	544,000	303,000	847,000	1,790,000	737,000	2,527,000

* *Increase.*

EQUIVALENT OIL SAVINGS

Gals.	1,360,000	758,000	2,118,000	7,160,000	2,948,000	10,108,000

TOTAL OIL SAVED ..... 12,226,000 gals.

Effect of the "Gas Conservation Program" on the anticipated maximum daily loads during the past winter period

				MCF Saving in Maximum Daily Loads	
	Number	*MFC Sendout—Peak Day*			
Systems	*Reporting*	*Anticipated*	*Actual*	*Amount*	
Light Oil	48	182,280	177,805	4,475	3%
Heavy Oil	27	700,107	664,003	36,104	5
Total	75	882,387	841,808	40,579	5%

Net saving of 40,579,000 cu.ft. in maximum daily load is a significant amount and ties in with the consumption data.

Army Bomber Crashes into Gas Holder

A FOUR-ENGINED Liberator bomber, an Army B-24, flying on a routine flight from the Army Air Field at Fort Worth, Texas, crashed into a waterless gas holder of The Peoples Gas Light and Coke Company in Chicago on May 20, killing all twelve occupants of the plane. Extremely low visibility, estimated at three-quarters of a mile with a 500-foot ceiling, combined with a steady rain, had forced the Chicago airport to operate by instrument flying rules. This and the fact that the pilot of the plane was unfamiliar with the area were cited as causes of the accident.

When the plane struck the holder its gasoline tank exploded igniting the gas, virtually destroying the 20-million-cubic-foot storage tank which was built in 1928 at a cost of $2,000,000. The holder did not explode; the pressure of the flame lifted the top. Four men at work in the gas company pumping station close by were uninjured.

The 500-foot holder is surmounted by a fifty-foot air beacon. It is in a sparsely settled area and there are no other buildings in the neighborhood. At the time of the accident it was near capacity, holding 18-million cubic feet of gas, but was not connected at the moment to the street mains.

Colloidal Fuel Test

COLLOIDAL fuel, a mixture of pulverized coal and oil, can be used in many industrial boiler plants of the nation which were designed to burn fuel oil, "if careful study and sound engineering practice" are employed in each case, the Bureau of Mines reported May 14 to Secretary of the Interior Harold L. Ickes, following a one-month trial of colloidal fuel in a boiler plant of the Atlantic Refining Company at Philadelphia, Pa.

In the tests, a mixture of 40 per cent pulverized bituminous coal, most of which was ground as fine as talcum powder, and 60 per cent No. 6 (Bunker C) fuel oil, was fed to a furnace using a stream atomizing type of burner. The test was run as part of the regular plant routine with existing equipment which was operated by the usual company boiler plant employees. Company engineers cooperated with the Bureau in the tests.

No difficulties arose in burning the colloidal fuel in the steam atomizing type of burner used, Bureau engineers informed Secretary Ickes. The flame responded smoothly to changes of boiler load and to variations of the amount of air used for combustion. In general, the troubles from the ash of the coal in the furnace were less than anticipated.

Bureau engineers believe that the amount of fuel oil normally consumed by commercial furnaces would be reduced one-third if colloidal fuel is substituted. Their research at the Atlantic Refining Company was prompted by the acute fuel oil shortage prevailing in certain parts of the country.

Our Record in War . . . *Recent National Contributions of the Natural Gas Industry*

Ernest R. Acker

By Ernest R. Acker

Chairman, Committee on War Activities, American Gas Association

SINCE October 1941, when the Office of Petroleum Coordinator was created, there has been maintained a continual liaison between the natural gas industry, through its self-appointed representatives, and the Washington Agency under Petroleum Administrator Ickes. Similar liaison has been maintained with the Power Branch of the War Production Board, now the Office of War Utilities. The result of this mutual cooperation has been an integration of the activities of the industry in the production, transmission and distribution of natural gas, which was highly essential to the needs of a war economy and to the elimination of wasteful or non-essential uses of critical materials. The results have been evident in the continuation and expansion of the contribution made by natural gas to our war demands.

War Needs Met

In spite of the shortage of critical materials the industry has, through logical development of its facilities, not only supplied the needs of its residential customers under war conditions, but has continued to increase and speed deliveries to new military camps and war industries.

With the assistance and cooperation of the natural gas industry, and under the direction of E. Holley Poe, director of the Natural Gas and Natural Gasoline Division of PAW, a production program is being carried forward which is planned not only to insure the maintenance of an adequate supply but also the conservation of an invaluable natural resource. In 1941, Robert E. Allen, Deputy Petroleum Administrator, said, "It is imperative that there shall be maintained adequate supplies of natural gas, natural gasoline and liquefied petroleum gases to meet constantly expanding demands of the defense program and essential needs. Natural gas, natural gasoline and other derivatives are among the nation's prime energy resources and constitute a vital component of the nation's fuel supply." The conservation of these great natural resources for the supply of basic fuels, carbon black and innumerable chemical derivatives represents an opportunity for an important contribution to the war effort equalled in few other industries.

Gas Conservation Program

In this connection it has been my privilege during the past year and particularly since early last fall to have a part in the discussions of gas industry representatives with governmental agencies on numerous subjects of general interest to both sections of the industry. Among the most important of these matters has been the conservation program conducted last winter which received effective support from the industry in spite of the sacrifice of revenue involved.

With the approval of the War Production Board the Association provided the industry with an extensive advertising and publicity campaign which was utilized by a large proportion of our member companies either as received or as a guide for the preparation of individual company campaigns. Approximately one-half of these companies were natural gas companies. Unfortunately I have no figures available at this time indicating the effect of the program in the natural gas field but I am satisfied that savings were effected in domestic and house heating usages which were a factor in permitting full service to military establishments and war industries.

In the manufactured gas industry the figures from 78 water gas companies in Districts 1 and 2 indicate, for the months of November, December and January of the past winter, reduced consumption by domestic and home heating customers equivalent to a saving of 12,000,000 gallons of enrichment oil when compared on a degree day basis with their consumption during the same three months of the previous winter. On the same basis it is estimated that the maximum day of these companies was reduced by the composite amount of 49,000,000 cu.ft. The activities of the gas industry in connection with the conservation program have been highly appreciated and commended by governmental officials and I am convinced that the best interests of industry will be served by the aggressive continuation of the program for the period of the present emergency.

Operating Costs Increase

Gas companies, both natural and manufactured, are seriously affected by increasing costs of operation which under normal conditions could be properly offset by rate increases. In this connection, however, it is clear from discussions with officials of the Public Utilities Division of the Office of Price Administration that they propose to resist all efforts for such rate adjustments except in the case of companies which can clearly demonstrate that the relief requested is necessary to avoid financial disaster.

In reviewing such cases the industry is on notice that the OPA will eliminate from operating expenses all federal income taxes except those result-

Presented at A. G. A. Natural Gas Management Conference, Cincinnati, Ohio, April 28, 1943.

ing from the application of the normal corporate tax rate. The surtax and excess profits tax are, in OPA's opinion, a charge against the stockholder. In several recent cases, in fact, OPA has taken the position that all federal income taxes should be excluded from operating expenses except the highest normal corporate rate applicable during the period 1936 through 1939, namely 19%.

Officials of the Public Utilities Division of OPA state that this policy will be carried to the courts for final adjudication. It is obvious that the recent freeze order of the President has stiffened the attitude of OPA on public utility rate increases, so that under the circumstances it seems inevitable that in most cases the gas industry itself will be required to absorb all increases in operating costs. I regret that I cannot report a more optimistic picture at this time.

WPB Approves Conversion to Gas

In February Mr. Krug announced that the War Production Board would release off-peak natural gas for fuel oil replacement on application from consumers engaged in war industry and essential civilian services. I wish to point out that the Board is now approving applications covering the conversion of industrial oil burning units to gas on a seasonal basis provided that a net saving in oil usage can be demonstrated and that effective oil standby can be continuously maintained. This policy presents the opportunity for large volume off-peak gas business which, at the same time, will make an effective contribution to the oil conservation program.

You are probably all aware that the Tin Branch of the War Production Board has for some time had under consideration the adoption of amendments to Order M-43-b covering the use of tin solder in the repair of tin-case gas meters. These amendments are now effective and permit the use of tin solder for the repair of meters that leak or are mechanically defective and for the repair of any tin-cased meter if the only tin-bearing solder used is derived from material reclaimed from meters brought in for repair. Under these amendments it is obvious that any company which can live on its recovered solder will be able to comply with the full requirements of the local regulatory body irrespective of other provisions of the federal order.

In connection with the use of recovered solder, several companies have recently conducted tests based on the belief that it has been the general practice of the gas industry for years to use more solder than was actually required for the adequate repair of gas meters. In the case of my own company,* we have demonstrated to our satisfaction that all classes of meters can be repaired without the use of any more solder than that recovered during the repair operation. Our experience with 500 meters repaired to date by the new method shows an average saving of 30% of the recovered solder. Even in the case of new meters coming in for repair for the first time, we have demonstrated that the meter can be completely resealed with the solder recovered during the operation, and that a small amount of solder will, in fact, be left unused.

New Soldering Technique

The method used in removing the old solder and applying the new requires a somewhat new technique in handling the soldering irons but can be readily mastered by the meter shop personnel with careful supervision and within a reasonable period of time. Meters re-soldered by this method have been subjected in every case to a 2½ lbs. pressure test without failure of a single joint, and in several tests have been subjected to internal pressures up to 20 lbs. without failure of a joint before buckling of the case.

This development, if successfully continued, presents the opportunity under the new amendments to the War Production Board order to continue meter testing on previous schedules provided that sufficient justification can be found for the continuation of meter shop organizations at their present level of employment.

During the past year, competition of utility services for war housing projects has been particularly keen and the activities of representatives of electrical manufacturers with governmental agencies has been increasingly aggressive. As an offset to material placed in the hands of interested agencies by the electrical manufacturers, the Committee on War Activities recommended the preparation of factual information as to comparative costs of various utility services for war housing projects to correct erroneous impressions created by the information submitted by competing interests. As a result a special committee of the Association has recently completed "A Study of Utility Services for War Housing,"† indicating the weights of critical materials required with various combinations of fuel services for cooking, refrigeration, water heating and house heating in accordance with "War Housing Utilities' Standards." This study, which has been placed in the hands of all responsible governmental officials, clearly disproves allegations that gas service is wasteful of critical materials.

Investigating Substitute Materials

The gas industry can take pride in the fact that this study is based on engineering estimates of the critical materials required for gas, electric, oil and coal services without any attempt to inflate the value of gas installations. As an outgrowth of this study, the Association is now investigating the possibility of utilizing non-metallic substitutes for main and service extensions in connection with war housing projects. This investigation has been undertaken at the request of governmental authorities with the thought that such extensions could be installed at government expense and abandoned at the end of the war.

Six different materials have been investigated, one of which, Orangeburg fiber conduit, is still under consideration. The use of such conduit has already been the subject of practical test from 1906 to 1926 at Nyack, N. Y. The present material is better than the 1905 product, but difficulty in making perfectly tight joints has discouraged field trials. The material, however, is now being subjected to field test in cooperation with gas companies in Pittsburgh and Washington. The use of non-metallic materials would obviously improve the position of gas service from the standpoint of weights of critical materials required.

* Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

† For a report on this study see A. G. A. MONTHLY, March, 1943, Pp. 97-101.

One of the most important war activities of the gas industry from a governmental and public relations standpoint is the cooperative effort in connection with the national programs of nutrition, including fuel, equipment and food conservation. The major portion of the responsibility for this effort falls on the home service personnel of the industry, and I am sure that you will all agree that their work has been unusually constructive and effective. Due to the foresightedness of the gas industry, home service organizations were already in existence at the beginning of the war and were in a position to play an important part in the national program. Governmental agencies have been highly complimentary in their comments on the work of our home service organizations, and I am sure that the relationship which has been established will result in future benefit to the industry as well as to our customers.

12-Million Home Contacts Made

The new wartime Home Service Committee booklet reports a figure of 12,000,000 contacts made by Home Service Departments of our member companies during the year 1942. These departments are actually on a war footing and in practically all instances have been relied upon by local community organizations, nutrition committees, civilian defense groups and the Red Cross for leadership and for the supplying of instructions, as well as headquarters, for meeting and demonstrations.

Our home service work has been an important factor in the fuel conservation program in that the Home Service News Letters issued by the Association have continuously circulated information on methods used by gas companies through the country to instruct housewives in the possibilities of the economical use of gas under war conditions. Conservation of appliances has been promoted by the Association through the Home Service Committee booklet "Uncle Sam Wants It To Last," which has been a best seller in the industry through its adaptation for gas company, manufacturer and advertising uses.

The current National Victory Garden program and the resulting increased emphasis on food preservation finds our Home Service Departments fully prepared. It has been naturally assumed that home service activities would fit in with these programs since the summer months have always brought many requests from customers for canning information. During the past summer these requests were received in four times the normal volume and it is fully expected that such requests during the coming summer will be double those of last summer. It is inevitable that domestic consumption of gas for home canning will be materially increased and that the somewhat incongruous position of the gas industry in urging conservation at the same time that it is promoting increased use for food preservation will be further intensified.

A significant idea was developed into a forceful advertisement in this billboard display of The Consumers' Gas Company of Toronto. It was adapted from A. G. A. industrial and commercial gas releases, according to J. McLaverty, superintendent of sales promotion for the Toronto utility

Food and Fuel Conservation

It is important, however, that both the conservation and food preservation programs be continuously maintained. Any apparent conflict in the two programs must be clarified through proper advertising. The participation of the gas industry in the food preservation program has been cleared with the War Production Board, so that no reaction is expected in connection with its gas conservation program. The industry is asked to support the slogan "Gas Is A Vital Fuel—Use It Wisely," and need have no hesitation in assuming that food preservation represents a wise use of our service.

In conclusion, I wish to express my appreciation of the help and support given to the Committee on War Activities by the Section Committees and Headquarters Staff of the Association, and for the excellent cooperation received from member natural gas companies on all matters of common interest. The response of the entire gas industry to the requirements of the war effort has been remarkable and has continuously won the commendation and respect of governmental agencies.

Planning Post-War Markets

(From Annual Report of United Gas Corporation)

LOOKING toward post-war markets for natural gas service, the United Gas Corporation has continued its efforts in the development of equipment and methods for utilizing natural gas to provide comfort air conditioning on a year-round basis. While active promotion of sales of air conditioning equipment has been discontinued, along with sales of other gas appliances not considered essential in the war effort, the corporation is cooperating with one of the equipment manufacturers in this development. This work has been approved by the War Production Board as representing a contribution to peace-time economy and materials are being made available to permit continuing in a limited way.

By the end of 1942 there had been installed, for 122 customers, gas air conditioning systems having a cooling capacity equivalent to 1,060 tons of refrigeration and ranging in size from approximately three tons to sixty tons. One-third of these installations are in private residences. In addition, equipment aggregating approximately one-third of this tonnage is now installed in several offices of the corporation for obtaining information on its characteristics and for training personnel.

It is planned to make an economic survey of each city and town served by the corporation for the purpose of determining the effect of war on the business of these communities and the customers served. The information obtained will afford a more complete background for post-war planning.

Problems the Transmission Man Sees in Relation to PAW and WPB

By R. H. ULRICH*

Southern Natural Gas Co., Birmingham, Ala.

PRIOR to our entering the war and the advent of PAW and WPB regulations providing for limitations on the purchase and use of materials, it was generally considered by many companies a prudent policy to make additions to inventories of certain materials and supplies in order to safeguard against shortages that seemed apparent in the future. It can be stated generally that many of the purchases made at that time, and later to be considered of an excess nature have contributed beneficially to the war program and will continue to do so, so long as they last.

Had those companies not availed themselves of a reasonable supply of materials at the time, the period following entrance into the war when industries were converting and gearing their facilities to the making of war materials, many pipe line companies, who previously had been getting their materials and supplies on relatively short purchase notice, by this time may have experienced difficulty in maintaining an adequate and uninterrupted service, not alone for public health and safety but in many instances to meet the greatly increased demands of industry, some of whom were the very manufacturers and vendors that purchases in normal times were made from, and who since had either converted or were converting their plants to war requirements.

In the beginning, because of lack of familiarity, difficulty was experienced by many as to the proper interpretation of the orders as written. Following what was considered a correct interpretation, the next step was to see that the information was passed along through the various channels of an organization so that all personnel could and would conduct themselves accordingly. At the outset this presented a most difficult phase in trying to arrive at compliance. In many instances certain kinds of materials could still be acquired from vendors without the use of priorities and some employees having authority to make purchases locally and having immediate use for materials would proceed to purchase their particular requirements as they had in the past. This condition has now however, generally corrected itself, due to nearly all vendors requiring priority ratings and also because of the tightening of inventory values that a producer may maintain and disburse.

Also in the beginning, Purchasing Department personnel experienced their troubles in trying to receive prompt and responsible commitments from vendors as to delivery dates. This has now become fairly routine, due to experience and familiarity gained by both vendor and purchaser. As time went on, revisions in various regulations would occur, which would necessarily cause further reviews with subsequent changes within an organization in order to comply.

One comment which the transmission operator can not refrain from making in connection with the P-46 and U-1 Orders, is that they appear to have been written with a view to the situation and problems of retail distribution companies, particularly electric companies. This is said not in criticism but recognizing the extreme difficulty of writing general rules which must necessarily be applied in many divergent situations. It is the opinion and hope of many, that, in future orders to be written, a simplified and more easily interpretable drafting be resorted to, which in turn, should assist in more prompt arriving at compliance.

On February 24, this year, Preference Rating Order P-46 was superseded by Utilities Order No. 1. The U-1 Order was in general similar to the P-46 Order, but provisions governing inventories and use of materials were brought up-to-date and made somewhat more workable.

Under U-1 probably one of the greatest difficulties facing the pipe line transmission man will be in arriving at strict compliance with requirements f-(1), (2) and (3). Natural gas systems in many cases are stretched over hundreds and sometimes thousands of miles of country, requiring many separate warehousing points for the maintaining of a supply service to both pipelines and pumping stations. Both of these functions of transmission must, in order to maintain adequate service, carry hundreds of inventory items with often a relatively small number being interchangeable from a utilization point.

FORUM ON THE EFFECT OF WAR ORDERS ON TRANSMISSION, DISTRIBUTION, AND PRODUCTION OF NATURAL GAS WHICH WAS A HIGHLIGHT OF THE NATURAL GAS MANAGEMENT CONFERENCE IN CINCINNATI, APRIL 28.

At the same time many of these items which are often urgently needed in an emergency, may be of a similar class as defined in U-1, so that the aggregate monetary total may appear extremely high from a minimum inventory standpoint. A natural gas system may have many compressor stations widely separated by distances, whose installed equipment may not be identical with that of adjoining stations, or any other station in the system, and with items of inventory being of the same class for the purposes of U-1; yet from a point of utilization not interchangeable. Here because of lack of similarity for utilization, the appearance would be that of an unnecessarily high minimum requirement.

In the case of compressor stations and especially on a system where a high load factor prevails and standby units are not always available, it is most essential that complete inventories with an adequate number of items be kept for immediate use. Generally speaking, the matter of trying to mail, express, freight or truck compressor stations and supplies from central supply points for purposes of lower inventory, to a number of twenty-four hour operations which may be spaced from forty to one hundred miles or more apart, is not satisfactory nor safe from a point of service.

Similar cases exist in districts or divi-

* Chairman, Transmission Committee, Natural Gas Section, American Gas Association.

At the Natural Gas Conference—above, left to right: Allan W. Lundstrum, New York; E. P. Noppel, New York, and S. R. Inch, New York. Right—W. G. Rogers, Cleveland; Floyd C. Brown, Chicago, and G. J. Neuner, Kansas City

sional sections of a transmission company's pipe line department. There may be many district or division warehouses in a system having in inventory necessary repair parts and supplies, many of which will not be suitable for transferring to adjoining districts or divisions because of lack of interchangeability. Especially is this true of some of the older transmission companies where originally a uniformity may have existed but through years of replacements a diversification of materials in place has resulted. Here again the transmission man may find difficulty in carrying the minimum inventories that he should and would like to maintain. His inventory may have many items of the same class, though of different size, test, and manufacture, all necessary for maintaining an adequate service, but as a class under regulation, the needed working minimum may appear large.

The new PAW Order, P-98-C, seems to define definitely what constitutes "surplus" materials and at the same time provides for a limiting of purchases and inventories. This new Order, along with the proposed "Material Re-distribution Program No. 2," should permit a method of allocation of presently available materials.

Although ably discussed elsewhere, it might be proper briefly to mention the effect that the well drilling restrictions in Petroleum Administrative Order No. 11 may have on a pipeline company. In as much as many transmission companies own and

(Continued on page 278)

Cover design of booklet giving timely information on increasing the efficiency of industrial furnces and gas burner equipment. Printed in red, white and blue, this mailing piece contributed to gas conservation in the Pittsburgh area

Effect of WPB Orders on the Distribution of Natural Gas

By D. P. HARTSON

Vice-President and General Manager, Equitable Gas Company, Pittsburgh, Penn.

D. P. Hartson

WE must not forget that while most of the WPB orders effect the customers only indirectly, that he is the one ultimately affected by all such orders. It is our business, now more than ever, to devote our attention to our customers who are making war materials and to our domestic customers who are backing up the manufacture of munitions either directly by working for the producing plant or indirectly. We have a definite part in keeping America healthy and strong and maintaining morale.

Since the effect of many of the WPB orders has been of a minor or secondary nature, this discussion will be confined to those orders which, in our experience, have had the most important effects. These orders are P-46 and its successor U-1, L-31 and M-43-b. Generally speaking, the effect of these orders on gas distribution can be divided into three main headings, namely:

1—Effect upon the normal extension of the distribution system for the connection of new customers.

2—Effect on limiting the amounts of gas used by present customers.

3—Effect on maintenance, repair and operation of the distribution system.

In addition to the three orders mentioned above there are several others which have to deal principally with appliances. Among these are L-79, dealing with the sale of plumbing and heating equipment, P-84 dealing with appliance repairs, and several others.

Naturally, much of what I may say is based on our Pittsburgh experience. We believe, however, that this experience is not materially different from that of other companies distributing natural gas for sale to the public in other sections of the country, operating under the same orders.

With the drain on our stock of various materials as a result of the war effort, it is our individual responsibility to see that each and every item of critical material is used only where it will further the war effort either through the manufacture of actual war equipment and weapons, or for definite civilian necessity. It is also our responsibility to see that every cubic foot of gas is used to the very best advantage in furthering the war effort and that not a single cubic foot is wasted. In short, we must all "do more with less." I like to think of the War Production Board as the agency which coordinates this company and individual responsibility into a collective effort which will bring about the desired results. So in speaking of the effects of the orders which have been issued, it should be kept in mind that we are not complaining about the way in which we have been affected. The enumeration of various effects may be beneficial in determining the best methods and routines to be followed in maintaining our operations at a satisfactory level.

Effect on Extension of Lines for Connection of New Customers

In the original P-46 order, the length of line extension permitted to be installed, without specific authorization, for connecting new customers, was limited and subsequent amendments since that time have reduced this permissible length. This restriction on line extensions set forth in P-46 and now in force under U-1, makes it necessary to review each application for gas service in order to determine whether the conditions comply with the order or if application for specific authorization is necessary.

When this order was issued originally, our company established a routine in which properly executed forms containing all the necessary data for each case was forwarded to the Engineering Division. Within this division, in cooperation with a newly formed Priorities Division, approval or disapproval in accordance with the limitations of the order, was given. Each approved case would be forwarded to the Priorities Division for filing an application for specific authorization.

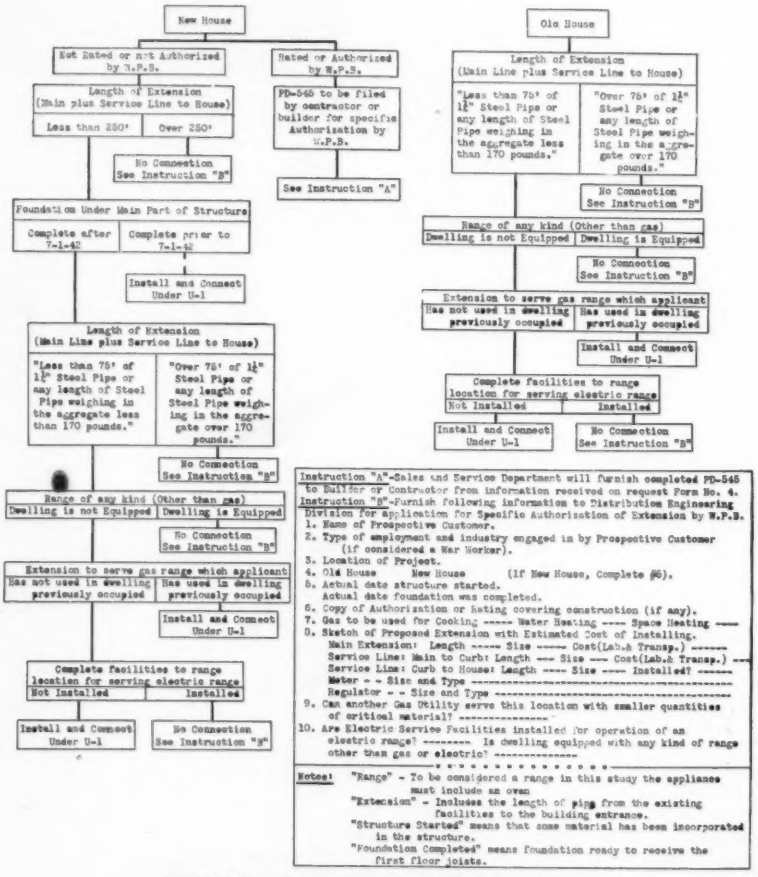
After this routine had been in effect for several months and the rules and restrictions became more fully understood, it was possible to prepare a chart to be used as a guide for arriving at the proper decision for nearly every application for gas service. This chart was distributed to all operating offices making it possible in practically all cases for the employee receiving the application for gas service to determine immediately if service could be established or whether specific authorization

is required. The use of this chart has materially reduced the amount of work and loss of time previously required as only a few special cases need to go further for a decision. This chart has been kept up to date in accordance with the amendments to P-46 and its successor U-1.

As of the end of 1942, Order P-46 did not have quite the overall effect in our company which might have been expected. It did conserve material but due to the fact that additional housing facilities were badly needed in the vicinity of Pittsburgh, the number of new residential customers connected has been reduced only slightly. The general result has been a reduction in the number of individual residences constructed and an increase in the construction of groups of houses, both by public authorities and private contractors. The limitation on the amount of pipe permitted to be installed for each customer has made it necessary for the builders to confine their constrruction to areas close to existing gas mains, thus reducing the amount of critical material used as well as the investment required.

As an illustration of this fact, for houses built by private contractors only in 1941, an average of 130 feet of main line pipe was required for each new customer connected where line extensions were involved, while in 1942 only 56 feet of main line pipe per customer was necessary. This is a desirable condition and the results give a good example of what can be accomplished by coordination of effort.

The "Housing Utilities Standard" set up by the War Production Board told the builders and utilities in advance what requirements must be met before utility service could be rendered. Our experience illustrates the gratifying results of these Standards—housing units were built with the use of much less critical material than is necessary under normal conditions. In this respect, the Public Housing Authorities in the Pittsburgh area have been testing various substitute materials which might possibly be used in their distribution pipe line systems to replace more critical items. As far as we know, none of these substitute materials have been used in the Pittsburgh area up to this time.



EQUITABLE GAS COMPANY AND PITTSBURGH AND WEST VIRGINIA GAS COMPANY

Chart to Determine Applicants Eligible for Gas Service Under Utilities Order U-1 Dated February 24, 1943 or Utilities Order U-1-b as Amended February 25, 1943

These new customers connected under P-46 in 1942 did not, however, contribute to the economics of gas distribution as would a similar number of additional customers under pre-war conditions. This is a result of Limitation Order L-31 which was issued by the War Production Board, effective February 26, 1942, and subsequent amendments of November 12, 1942 and January 1, 1943. As far as residential customers are concerned this order prohibits the use of gas for central or space heating unless previously installed or operated by the same customer on the same premises. In 1941 approximately 40% of the new houses connected to our lines used gas for central heating. Since March, 1942, only those houses complying with the conditions of the original order, or where the equipment was already installed or provided for in the specifications, could be connected. There were but few of these so for the greater part of 1942 there were no new gas-heated homes connected to our system.

Limitation Order L-31 was issued to curtail the consumption of natural gas in certain areas where shortages existed (or were threatened) because of increased deliveries of gas required by war industries. In the non-residential market, for purposes other than space heating, this order when issued permitted natural gas to be used up to 10,000 cu.ft. per day—this figure was reduced to 5,000 cu.ft. per day by the amendment of November 12, 1942. All uses desired over these amounts required exemption from the Order by application to the War Production Board.

Limitation Use of Gas by Customers

Being in a community predominantly industrial, sometimes called the "Arsenal of Democracy" because of the fact that practically all of our industry, heavy and light, is on war work, we have had many calls for exceptions to L-31. We have cooperated with many of our industrial customers in their requests for permission to use more gas. Where this gas has been required for war materials, the requests have usually met with a prompt response and permission has been given. In some cases the installation by the customer of stand-by equipment has been required. In others where a temporary shut-down would not be serious, no stand-by equipment has been specified.

The operations under L-31 have placed the responsibility for compliance on both the customer and the company. It has been necessary for the company to see that, as far as practical, every customer should be made acquainted with the requirements of L-31. As a rule, natural gas distributing companies conveyed the prohibitions of this order to their customers by a letter printed on the monthly bill and by newspaper advertising. Industrial customers were notified by form letter. This information served only to give rise to many questions on the part of customers who were involved in some way by the order. Dealers were very much concerned as to the conditions

under which gas appliances could be sold and installed. L-31 was responsible for a greatly increased number of customer contacts. We found that our sales organization which had been reduced because of the inability to take on new load and further reduced by the draft, came in very useful in following up the numerous customer contacts made necessary by the operations of L-31.

As the object of L-31 was to reduce the amount of gas used for house heating and other purposes not directly essential to the war effort, particularly on cold days, it was realized that without the connection of any new appliances our present customers could greatly increase the use of gas in the home on peak days. It was also realized that if customers' cooperation was obtained that the amounts used during cold weather could be reduced, thus guaranteeing a more reliable supply to industry. Accordingly, the natural gas companies in the Pittsburgh area and in other so-called critical areas embarked on advertising campaigns telling the customer that "Gas is Ammunition—Use it Wisely," pointing out the importance of natural gas to the war effort and soliciting their support in conserving it. Domestic customers were asked:

(1) Not to use kitchen range for house heating.
(2) To close off unused rooms where heat was not needed.
(3) To avoid use of gas room heaters where possible.
(4) To lower thermostat temperature settings.
(5) To use hot water sparingly, etc.

Special cold day advertising embodying the foregoing was used whenever the weather was abnormally cold. In addition, similar requests and warnings were given on the radio during periods of cold weather.

In addition to the "Gas Is Ammunition—Use It Wisely" series of advertising and radio broadcasts, the gas companies in the Pittsburgh area united with the agencies handling house insulation and storm windows to put on a concerted campaign for home insulation. The results of this campaign were indeed gratifying.

A large number of gas-heated homes were insulated. Many had storm doors and windows installed. A number of coal heated homes were also included. We feel that these homes now heated by coal will be very good gas heating prospects when the time comes that gas heating may again be solicited. Our records show that in the Pittsburgh area a total of approximately 10,600 homes either had storm windows installed, were insulated, or both. Of these, approximately 6,500 were homes using gas heat. Such installations saved as much as 30% on gas used for heating. They will continue to do so each year. The homes insulated in 1943 will add to this saving. We feel that the home insulation campaign has been decidedly beneficial in cutting

(Continued on page 278)

Relationship of PAW and WPB to Production Activities of the Natural Gas Industry

L. T. Potter

By L. T. POTTER*

Lone Star Gas Co., Dallas, Texas

ANY discussion of natural gas production problems and their relationship to the Petroleum Administration for War and to the War Production Board should be based upon an understanding of the functions of natural gas production in the industry. These functions grow out of the peculiar obligations imposed upon the industry by the service characteristics inherent in the ultimate disposition of the gas which is provided by such production.

The integrated business of producing, transporting, and selling natural gas is a public utility service and the operations required to render this service naturally fall into three primary and distinct categories; production, transmission, and distribution. Each of these categories present specific technical and operating problems which are dissimilar and often virtually unrelated but it is essential that each of these relatively distinct phases of operation be effectively coordinated before any integrated natural gas system can fulfill its service obligation. The necessity for this coordination is made more imperative by the fact that operations in each of the basic categories must proceed simultaneously. Disregarding minor exceptions and reservations which do not affect the fundamental considerations, natural gas cannot be produced today for transmission two weeks hence nor can natural gas be transported today for distribution two weeks hence. Practically speaking, the natural gas utilized by consumers today must have been produced and transported today in the quantities and at the rates required to meet the combined, concurrent demands of the consumers.

The current capacity of an integrated natural gas system depends upon the capacity of wells to produce gas and the capacity of transmission lines and distribution systems to deliver gas. In any given system the capacity of transmission and distribution lines may be regarded as a fixed factor or as one that is subject to modification on the basis of engineering design. Manifestly the capacity of gas wells connected to such a system cannot likewise be regarded as a fixed factor nor can their capacity be increased or even maintained during a period of time except by exploratory drilling or by additional drilling in fields not previously developed to the fullest extent.

It is natural to put emphasis upon current peak demands when describing the service obligations of a natural gas system but it should be remembered that continuity of service under all conditions, peak and otherwise, is essential to the rendering of a satisfactory service.

To relate this fundamental conception of the natural gas business to the production phase of that business, it is only necessary to say that the production must provide delivery capacity in sufficient amount at all times to permit transportation of the gas to the consumers in practical coincidence with their demands and such delivery capacity must be maintained over a period of time in such a way as to provide continuity of service. Proper performance under this requirement as to production activity may be achieved only by means of a continuing study of present and prospective demands for natural gas in respect to a particular pipe line system and by means of proper adjustments in the design and operation of such system, including appropriate changes in the production phase.

It is obvious that the production operations of a natural gas pipe line system should result in the attainment of two principal objectives which may be stated as follows:

1. The development and maintenance of a reserve supply of gas which is adequate in amount to protect the service of the system for as long a period of time in the future as may be desirable and feasible.
2. The maintenance of delivery capacity from such reserves at the point required to maintain service continuously.

It is probably a proper conception of these two objectives to think of one, the maintenance of a reserve, as a long range objective and to think of the other, the maintenance of delivery capacity, as the current objective, the attainment of which cannot be deferred if service is to be maintained.

This conception of the requirements

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placed upon the production phase of the natural gas industry is significant in a consideration of the relationship of the Petroleum Administration for War and of the War Production Board to the industry. The PAW is concerned with obtaining the best possible use of our petroleum resources, including natural gas, particularly in view of the war problems now confronting the nation. The WPB, insofar as its activities relate to the subject of this discussion, is primarily concerned with the utilization of materials in a manner consistent with the best possible solution of our war problems. Assuming the correctness of these premises, it may be stated that the objectives of the PAW and of WPB in respect to the production phase of the natural gas industry will be attained if no more gas wells are drilled than are positively required to permit proper operation of the natural gas industry.

There is probably little doubt that some natural gas systems, perhaps all of them in certain sections of the country, can virtually eliminate for a considerable period of time all exploratory drilling which would ordinarily be carried on for the purpose of the long range objective previously mentioned —that of developing and maintaining reserve supplies of gas. There may be some natural gas systems also which are in such position as to permit the temporary elimination of any drilling for the purpose of the current objective of maintaining delivery capacity. However this may be, it is certain that any natural gas system requiring a new gas well for the purpose of either of the two objectives would be able to show the need for such a new well in a concrete, positive manner. It is essential to the maintenance of natural gas service that the drill-

(Continued on page 279)

Technical Advisory Committees Help Research Program

E. J. BOOTHBY, chairman of the A. G. A. Committee on Domestic Gas Research, has appointed Technical Advisory Committees to assist the main committee in preparing working outlines and in reviewing technical material before it is released for publication. There are four such advisory committees, each composed of appliance manufacturers and utility engineers, the former nominated by the Association of Gas Appliance and Equipment Manufacturers. These committees are concerned with the following domestic gas research projects: No. 1 Domestic Gas Cooking Research; No. 2. Domestic Gas Water Heating Research; No. 5. Direct Gas Space Heating Research; No. 6. Central Gas Space Heating Research.

Paul R. Tappan

Chairman of the Technical Advisory Committee for the Gas Cooking Research Project is Paul R. Tappan, president, The Tappan Stove Company, Mansfield, Ohio. Mr. Tappan is a graduate engineer—Case School of Applied Science, Class of 1910—and has spent his entire business career with The Tappan Stove Company. He became active head of the company in 1916 and was elected president in 1937. Under his able leadership the company has grown and prospered as a manufacturer of gas stoves and is at present producing important material for the armed forces. Mr. Tappan has contributed his abilities to the gas industry through active membership on several important A. G. A. committees in the cooking field over a period of years.

Serving with Mr. Tappan are: D. W. Bennett, George D. Roper Corp., Rockford, Ill.; Howard Brown, Rochester Gas & Electric Corp., Rochester, N. Y.; Guy Corfield, Southern California Gas Co., Los Angeles, Calif.; E. C. Fisher, Odin Stove Mfg. Co., Erie, Pa.; C. R. Graham, James Graham Mfg. Co., Newark, Calif.; A. B. Lauderbaugh, The Manufacturers Light & Heat Co., Pittsburgh, Pa.; J. M. Leighton, Cribben & Sexton Co., Chicago, Ill.; Leon Ourusoff, Washington Gas Light Co., Washington, D. C.; L. A. Peachey, Boston Consolidated Gas Co., Jamaica Plain, Mass.; and Arthur Stockstrom, American Stove Co., St. Louis.

L. R. Mendelson

Chairman of the Technical Advisory Committee for Gas Water Heating Research is L. R. Mendelson, president, The Hotstream Heater Company, Cleveland, Ohio. Mr. Mendelson has brought to this work the capabilities of an experienced business man and executive. Originally starting out as a lawyer, after having graduated from Baldwin-Wallace College, "Lou," as he is known to his associates, later had experience as a newspaper man before entering the water heater business. For six years he grounded himself in every phase of this business and was ready in 1915 to launch the successful Hotstream Heater Company.

Mr. Mendelson was chairman of the Hot Water Heater Division of Association of Gas Appliance and Equipment Manufacturers in 1938-'39 and has served on several gas industry marketing and research committees. During the war he is representing the industry on an Advisory Board of the Plumbing and Heating Division of the War Production Board.

"Lou" Mendelson's approach to business and research is shown in his philosophy, which accepts business progress as a wholesome diet and thus thrives upon its contesting factors. Never an interested bystander, he is an active proponent of anything which points to better living conditions—whether the idea concerns hot water or better schools in his community.

Assisting Mr. Mendelson on the committee are the following: Robert C. Bryce, Philadelphia Electric Co., Philadelphia; R. J. Dougherty, John Wood Mfg. Co. Inc., Conshohocken, Pa.; J. W. Farren, Bastian Morley Co. Inc., La Porte, Indiana; W. R. Fraser, Michigan Consolidated Gas Co., Detroit; H. Morgen Gerken, The Laclede Gas Light Co., St. Louis; H. W. Geyer, Southern Counties Gas Co. of California, Los Angeles; C. D. Grover, Whitehead Metal Products Co. Inc., New York, N. Y.; E. R. Koppel, A. O. Smith Corp., Milwaukee; E. R. Rothert, The Cincinnati Gas & Electric Co.; George A. Short, The Hotstream Heater Co., Cleveland; Frank E. Wood, Day & Night Water Heater Co. Ltd., Monrovia, Calif.

Keith T. Davis

Chairman of the Technical Advisory Committee for Central Gas Space Heating Research is a capable young Nebraskan, who has had wide experience with committee work, Keith T. Davis, L. J. Mueller Furnace Co., Milwaukee. Before undertaking important engineering work with the Mueller Furnace Co. in 1937, Mr. Davis had more than a decade of intensive utility experence in gas house heating, as well as air conditioning, industrial gas sales and other utility experience. He has been associated with the Iowa-Nebraska Light & Power Co. and Cedar Rapids Gas Co.

Mr. Davis has contributed a great deal to the advancement of central gas house heating through active participation over a period of years on eight industry committees. These committees are as follows: A. G. A. Committee on Engineering Handbook "Comfort Heating"; Mid-West Gas Association Committee Studying Chimney Condensation Problems; A. G. A. Approval Requirements Subcommittee on Central Heating Gas Appliances; A. G. A. Approval Requirements Subcommittee on Unit Heaters; A. G. A. Approval Requirements Subcommittee on Duct Furnaces; Research Advisory Committee and Test Code Committee of National Warm Air Heating &

(Continued on page 280)

Women Commandos... *A Radio Program Building Good-Will for Oklahoma Natural*

By J. H. WARDEN

General Sales Manager, Oklahoma Natural Gas Co., Tulsa, Okla.

WOMEN COMMANDOS—Actualities behind Oklahoma women who are daily contributing their efforts toward American Victory—featuring Julie Benell and the twin pianos—brought to you each morning, Monday through Friday, by the Oklahoma Natural Gas Company."

With this opening announcement the Oklahoma Natural Gas Company, since September 1942, has sent into thousands of Oklahoma homes a radio program that is taking a leading part in keeping Oklahoma women informed on war activities.

Julie Benell, an experienced and well-known radio personality, is ideally fitted to carry on the program by her work on various civic committees and in war activities in Oklahoma. It was while in this work that she realized the tremendous need for a radio program by which women could be kept informed in regard to war work on the "home front." From the realization of this need, "Women Commandos" was created.

Preparedness on Home Front

When requested to sponsor the program, the Oklahoma Natural saw in it an opportunity to keep its name before the public during the time when normal activities are suspended and contracted for. "Women Commandos." Miss Benell writes continuity, makes arrangements for interviews, and conducts the program. She tells the story of Women Commandos—that it means efficiency, preparedness, and worthwhile efforts on the Home Front—that every woman, no matter what kind of a job she is doing, is a Woman Commando in her own right if she is doing her job well. Thus the program has an appeal for every woman regardless of whether she is the head of a Nurses' Aide group, has organized a blood plasma bank in her community, is a U.S.O. worker, or is taking care of her family.

By interviewing the leader of any activity on the air, Julie allows the woman herself to tell what the organization she represents is doing and how any woman listening can join the activity in her community or can organize a similar program if none is operating in her town. These personal interviews give the program a human touch and add to its interest.

Julie Benell

If there was any question about the need for such a program, all doubt was soon dispelled by the immediate acceptance which the program received and the wholehearted cooperation extended by all War Agencies. Upon hearing the first broadcast, the chairman of the executive committee of the Oklahoma County-City Council of Defense wrote as follows: "We want you to know that we will do everything in our power to publicize this program among the many thousands who have enrolled in volunteer work in Oklahoma County. We intend, with your permission, to adopt this program as one of our official defense programs."

The favorable response to the appeals made for assistance and additional participation from the listeners to the first few broadcasts resulted in numerous requests by other organizations for an opportunity to have their projects given recognition on the program, as well as requests by organizations which had been featured to be given additional time. Some of the activities which have been more prominently featured by the daily broadcast are the Nurses' Aide program, the blood plasma banks, the Women's Canteen Corps, and the Women's Motor Corps.

Foster Home Campaign

One of the most recent activities that has been sponsored on the program is a Foster Home Campaign, attempting to find temporary homes for underprivileged children, which is being carried in by the Oklahoma Welfare Association. The results being obtained were negligible when its chairman asked for assistance from "Women Commandos." Four broadcasts were allotted to the activity and at this time only three of the programs have been presented, but as a direct result of those broadcasts fifty children have been placed in thirty-three homes.

In addition to working on strictly women's war activities, the program was expanded so as to assist in the many campaigns and drives that are being conducted throughout the country, such as the War Chest, the American Red Cross, the Waste Fat Campaign, and many others. One of the most successful activities which has been conducted by the program was the Fur Drive. The head of the recruiting office for the Maritime Commission asked if "Women Commandos" would sponsor a drive in Oklahoma to collect furs which would be made into vests for seamen of the Maritime Service.

The offices of the Oklahoma Natural Gas Company were designated as the official fur collection depots. A statewide motor express agency agreed to deliver the furs collected to a central depot. As a result of this program 6,000 pounds of furs were contributed by approximately 1000 people. In addition to a number of letters of commendation for this activity, the Oklahoma Natural received a Certificate of Cooperation from the Maritime Commission.

Another activity sponsored through the radio broadcasts was a sales training program conducted by the Oklahoma City Retailers' Association. The following letter from the secretary-manager of the association expresses their appreciation of the assistance given: "I can't tell you how much we appreciate the splendid cooperation you gave us in starting our Emergency Replacement Classes. I have known for a long time that Julie Benell had a real following of listeners but I was totally unprepared for the flood of applicants for places in the classes that followed a short, fifteen-minute program. You will be interested in knowing that nine hundred and twenty women appeared for interviews and that we had hoped for around four hundred."

Gives Point Rationing Aid

"Women Commandos" was used extensively to inform the public on Point Rationing prior to the time it went into effect and, according to the State Administrator of the Office of Price Administration, did a great deal to eliminate the confusion incident to its inauguration.

The program played an important part in the special Oklahoma Recruiting campaign for the Women's Army Auxiliary Corps. As a result of one broadcast seven women were enrolled in a special radio course that was first announced over the "Women Commandos" program. An appreciation of the help given in recruiting enlistees for this corps was expressed by an officer of the Eighth Service Command in the following statement: "I wish to take this opportunity to thank you, on behalf of the Commanding General of the service command and of myself as the officer in charge of WAAC recruiting for the entire command, for your very valuable assistance in promoting our recruiting campaign which we are striving so hard to make successful."

For four days each week the program follows a set pattern and is devoted to war activities of interest to women and the public in general. The voice of Julie Benell, with interviews from different people, interspersed by sparkling music from the twin pianos, gives the program variety and appeal, but the high spot in the week is "Oklahoma Hero Day." Each Wednesday is set aside to honor an Oklahoma member of the armed forces who has received recognition by the Government for an outstanding service in the war. Whenever possible the mother, wife, sister, or some other close relative of the person to be honored is brought to Oklahoma City for an interview on the air. The day's broadcast is in honor of the Oklahoma hero, but is dedicated to the "woman behind the hero." A brief account of the heroic deed is given and some interesting facts about the hero himself are brought out.

Hero Days Popular

These appearances have proved themselves to be a red letter day in the lives of many Oklahoma women. As most of the heroes are from small communities, a busy day and night in Oklahoma City as the guests of Julie Benell with luncheons, shopping tours and shows, besides the recognition of the radio program makes a never-to-be-forgotten mark on the memories of the "women behind Oklahoma's heroes." The sincere appreciation of these women can be felt in the following excerpt from a letter received from one of them: "I wish to thank the Oklahoma Natural Gas Company for playing Fairy Godmother to a lonely mother, and giving her several hours of grand pleasure."

The women in the home also appreciate this service program. Mail alone has proved that. Surveys, conducted by the Oklahoma Natural independently, show that "Women Commandos" has almost fifty per cent of the entire listening audience—as many listeners as the other three Oklahoma City stations combined. Of those listening to "Women Commandos," one out of every three women (in answer to a direct question over the 'phone) can identify the sponsor of the program, which is an extremely high percentage for this type of program. "Women Commandos" is appreciated because it is listened to.

This article ends as the program ends: "You have been listening to 'Women Commandos,' brought to you as a service of the Oklahoma Natural Gas Company."

Stoves to be Rationed

NATION-WIDE rationing of heating and cooking stoves that burn coal, wood, oil or gas will begin in the latter part of June.

The new program announced by Price Administrator Prentiss M. Brown May 14, expands the plan under which coal and oil heating stoves already are rationed under OPA Ration Order 9 in 32 states where fuel oil is rationed. The plan for rationing cooking stoves as well as heating stoves was developed to assure fair distribution of the limited number of stoves that will be available, Mr. Brown stated.

Six specific types of stoves will be rationed under the program: coal or wood heating stoves (including laundry stoves, but excluding water heaters); oil heating stoves; gas heating stoves; coal or wood cooking stoves; oil cooking stoves; and gas cooking stoves.

Laboratories Honored by War Department

THE American Gas Association Testing Laboratories have been placed by the War Department on its Quality Control Classification "A" List. This denotes complete approval and is the highest classification bestowed. Under its provisions, full responsibility is entrusted to the Laboratories in determining that the products they are delivering to the War Department meet all requirements established by it. This award based on demonstrated performance is all the more noteworthy in view of the comparatively short time in which the Laboratories have been engaged in direct war work. It affords striking proof of their ability to undertake difficult assignments and shows the confidence imposed in the American Gas Association by those responsible for winning the war.

Under a recent ruling of the War Manpower Commission, employees of the Cleveland Laboratories are now considered as being in "essential" employment. This action taken in connection with the Cleveland Employment Stabilization Plan shortly followed announcement of establishment of a 48-hour work week in the Cleveland Area. This ruling of the War Manpower Commission is expected to be most helpful in future operations.

As We See It . . .

The Value of the A.G.A.

Some one has said that to stop association work during a world emergency would be as disastrous to an industry as shutting all hospitals during an epidemic would be to a community. Last week's gathering of gas men—accountants, executives, natural gas officials and distribution engineers—at Cincinnati testify fully to the value of the American Gas Association during these trying times.

While the attention of all of us is necessarily concentrated on daily duties, plus headlines from the four corners of the world, it seems wise to pause a moment and survey objectively just what the A.G.A. means to its members, to the gas industry as a whole, and to the nation it serves.

The A.G.A. concerns itself with all matters of direct interest to the industry which are handled to better advantage collectively than by individual companies. It is a fact-finding, coordinating group sustained by the industry. To summarize all its activities would require far more space than this page allows, so let's look at some of the highlights:

A.G.A. advises company members of government orders, rulings and directives directly affecting gas-utility operations on such matters as procurement of material, conservation and limitation, equipment and service restrictions, priorities, manpower, nutrition, etc. It keeps members informed of significant Federal and State legislation, court and commission decisions. It assists members to make and maintain required contracts with government agencies in Washington and elsewhere.

It aids members to sell gas to Government for use in housing projects, buildings and cantonments. It compiles all information possible on war needs and duties, and helps members to be prepared for any emergency. It maintains a Salvage and Exchange Bureau to assist members in obtaining needed equipment and materials for sale or exchange by other companies.

Of long-term value as well as war use, the A.G.A. conducts programs of research in heat applications, in developing new types of residential, industrial and commercial applications, in measurement of gas, in controlling wells and conserving national resources, in pipe corrosion and protection, etc. Its Testing Laboratories and committees have developed standards, adopted as official American Standards, for testing and certification of gas appliances which have made available to the public safe, efficient, durable appliances.

The A.G.A. makes possible the conduct of a national advertising campaign; it prepares and conducts appliance sales campaigns; it conducts regional and national conferences for the promotion of residential, commercial and industrial gas sales.

It conducts technical conferences covering production, manufacture, transmission and distribution of gas; conferences on all phases of accountancy; national conventions for the exchange of all types of information.

Many committees are maintained on all phases of gas company operation, made up of specialists in their fields. At present, all activities of the Association essential to the usefulness of the gas industry in the war are directed by a committee of able executives. Another committee is directing studies to strengthen the position of gas fuel after peace is won.

The A.G.A. acts as engineering consultant in matters which affect the entire industry in the field of promotion, production, transmission and utilization. In addition to its own staff of specialized engineers, the Association includes committee members and other qualified experts to make available the most complete information to company members.

The Association publishes at regular and irregular intervals magazines, information bulletins, reports, proceedings of conventions and conferences, technical manuals, approved appliance lists and a large amount of other printed matter of benefit to the member companies. It maintains a statistical bureau which collects, collates and distributes essential data of the gas industry to the daily press, financial publications, government bureaus and members of the Association.

The A.G.A. has developed and maintains perhaps the most complete data file and library on the subject of gas in this country, the contents of which are available to the membership. It maintains a rate-reporting service that includes all gas-rate schedules for communities in the United States and its possessions, Canada and Newfoundland. It prepares and encourages publicity on the gas industry in magazines, newspapers and other media reaching all industry and the general public.

The Association is prepared to represent the gas industry at any time on any national problem directly affecting the gas industry, whenever collective action would be more effective than individual company effort. Offices of the A.G.A. are now, and have been since the beginning of the national emergency, devoting much time to rendering invaluable service in Washington and elsewhere.

The A.G.A. is directed in all its activities by a most competent and fully representative Executive Board that meets at regular and specified times. The Association has always maintained closest possible contact with the gas industry in Canada and Europe. At present, its main European contact is the Institution of Gas Engineers in London, through which agency the A.G.A. membership is kept supplied with first-hand, frequently confidential, information about gas-company information under enemy attack.

The Association acts as the gas industry's clearing house, through competent representatives, for the American Standards Association, the National Fire Protection Association, the National Technological Civilian Protection Committee, the Chamber of Commerce of the United States, the National Industrial Conference Board, and many others.

A more complete statement is available from A.G.A. Headquarters.

REPRINTED FROM GAS AGE, MAY 6, 1943

Servel Radio Program Features President Bridge

AN innovation in Servel's popular radio program, "Fashions in Rations," was the appearance on May 8 of Arthur F. Bridge, president of the American Gas Association, who was interviewed by Miss Billie Burke, star of the program. Thousands of listeners heard the following dialogue:

ANNOUNCER: And now friends . . . . we have a special guest with us today. Ladies and gentlemen, and Miss Burke . . . . may I present Mr. Arthur F. Bridge, president of the American Gas Association, and vice-president and general manager of the Southern Counties Gas Company.

Miss Billie Burke and President Bridge team up on radio program

MISS BURKE: How do you do, Mr. Bridge, and welcome to FASHIONS IN RATIONS.

MR. BRIDGE: Thank you, Miss Burke. I'm very happy to be here.

MISS BURKE: Well, we are happy you are, too . . . . because it's not every week we have a president come to visit us. . . . . By the way, Mr. Bridge, would you tell us what *is* the American Gas Association?

MR. BRIDGE: Why, Miss Burke, it's an association of gas utilities throughout the country. We even have members in Canada and Mexico.

MISS BURKE: My goodness! Your association must be awfully big!

MR. BRIDGE: It *is*, Miss Burke. The American Gas Association membership comprises utility companies that serve 19 million customers . . . . or about 90 million people. And all of these people have benefited in some way from our association.

MISS BURKE: How, Mr. Bridge?

MR. BRIDGE: Well, having this association makes it possible for all utility companies to work together. Any improvements in service or benefit to the public in one area are immediately available to utility companies in other areas all over the country.

MISS BURKE: Oh . . . . that's a good idea.

MR. BRIDGE: Another activity the Association coordinates is the home service departments of the local utility companies, I mean, the cooking schools. Literally millions of women have learned to cook the modern way in these gas company cooking schools . . . . and today, because of wartime food restrictions, our schools are doing an increasingly important job.

MISS BURKE: You're right, Mr. Bridge. Are the gas companies doing anything else in war production?

MR. BRIDGE: They certainly are, Miss Burke. Natural gas, or some of its constituents, go into the manufacture of motor fuel. It becomes a part of aviation gasoline where it serves in all the theatres of war. It adds resistance to wear, and strength to tires that are used for jeeps, army trucks, and flying fortresses. It becomes the principal element of synthetic rubber. It is used in solvents, plastics and explosives. . . . . So you see that meeting all the normal demands, *and* the war demands, has put a terrific strain on all the facilities of the utility companies.

MISS BURKE: I certainly do see, Mr. Bridge, and I think your association is doing a very fine job.

MR. BRIDGE: We, of the gas industry are glad to be associated with Servel and with you Miss Burke, on this FASHIONS IN RATIONS program. Our aim has always been to be of help and service to the public and we believe this program is helping to solve many food problems. I think, too, that our home service experts report on your program, Miss Burke. They bring food news of interest to the local community.

MISS BURKE: That's right, Mr. Bridge. The gas companies in sixty-eight cities cut in each week with local food news. Are you responsible for that, too?

MR. BRIDGE: Yes, coordinating activities of this sort is one of our big jobs.

MISS BURKE: Well, then you must be responsible for Alice White and for Mr. Smith, the announcer, and for Jefferson James, my cook. And—for *me*, too!

MR. BRIDGE: No, Miss Burke—Servel Incorporated has that honor. But we of the association are just as proud of you as is Servel. Thank you very much for inviting me here today . . . . and please carry on the good work.

MISS BURKE: Now you're cooking with gas, Mr. Bridge, and thank you very much for coming.

Carbon Black Sales Decline 30 Per Cent

THE carbon black industry experienced reverses in 1942, according to data reported to the Bureau of Mines, United States Department of the Interior. Production was 3 percent below the record of 1941 and sales dropped 30 percent. Anticipating a rise in price, which occurred in January 1942, consumers replenished their stocks at the end of 1941. Curtailments in exports and in rubber manufacture contributed toward a decrease in demand which was not offset by increased uses for military and for miscellaneous purposes.

Stocks held by producers at the end of 1942 were 242,755,000 pounds, the highest level since 1932, when 257,998,000 pounds were reported, and more than double the 118,847,000 pounds in stock at the end of 1941.

Natural gas burned in the manufacture of the 574,006,000 pounds of carbon black produced in 1942 amounted to 335,533,000,000 cubic feet, 8 per cent less than was used in 1941. Carbon black producers paid an average of 1.29 cents a thousand cubic feet of gas in 1942 compared with 1.13 in 1941.

Liquefied Petroleum Section to PAW

FORMATION of a Liquefied Petroleum Gas Section in the Division of Natural Gas and Natural Gasolines was announced May 3 by Petroleum Administrator for War Harold L. Ickes.

The personnel of the section was transferred without change from the War Production Board, where the handling of distribution problems of liquefied petroleum gases came under the jurisdiction of WPB's Plumbing and Heating Division.

The section continues the functions for which it was responsible in the WPB, principally the administration of WPB's Limitation Order L-86 which regulates the installation of liquefied petroleum gas equipment.

Liquefied petroleum gases affected by the L-86 order are butane, propane and mixtures of these two hydrocarbons, which are used as fuel in many war plants and in homes.

"A sharp increase in consumption, plus difficulty transporting the high-pressure gases to consuming areas, has made it necessary to regulate the further expansion of the use of liquefied petroleum gases."

Vacation Schedules

JOSEPH B. EASTMAN, director of the Office of Defense Transportation, has asked business and industry to begin and end all employee vacations on Tuesdays, Wednesdays, or Thursdays, and to schedule employee vacations throughout the year.

Dr. Fieldner's Post-War Fuel Picture

Dr. A. C. Fieldner

THE post-war United States eventually may be forced to rely on domestic coal and oil shale deposits as additional sources of liquid fuel, Dr. A. C. Fieldner, chief of the Fuels and Explosives Service of the Bureau of Mines, stated in a speech, "Recent Developments in Fuels Supply and Demand," scheduled to be delivered last month before the Western Society of Engineers at Chicago, Ill.

Dr. Fieldner, who for many years has been active in the Bureau's studies in the production of liquid fuels from coal and oil shales, explained that coal during the war has taken over much of the burden formerly carried by petroleum and that because of the heavy consumption of petroleum products many of the industrial conversions from fuel oil to coal for heat and power may remain after the war.

Decline in Oil Field Discovery

"Expected higher prices for fuel oil will tend to discourage new installations using this fuel," Dr. Fieldner said. "The greatest concern for the future supply of oil is the continuing decline during the past four years in the discovery of new fields. This calls for a marked increase in exploration to keep current withdrawals from reaching the point where total recovery is diminished."

To aid in forestalling such a possibility, Petroleum Administrator for War Harold L. Ickes has suggested the drilling of 4,500 "wildcat" wells during 1943, compared with 3,045 wells drilled in 1942, Dr. Fieldner said in his speech.

"If this enlarged exploration program is unsuccessful in restoring our former rate of finding new reserves of oil, the present trend of substituting coal for the industrial and domestic use of fuel oil may continue, and ultimately supplementary supplies of liquid fuel from oil shale, coal, and vegetable products may be required," Dr. Fieldner asserted. "It is too early to make any definite predictions in this respect, but it is not too soon to give thoughtful consideration to this problem."

Quoting a statement made in 1942 by William P. Cole, Jr., former chairman of the Petroleum Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, that "with our present transportation and present rate of discovery, showing any regard for conservation, we will be short of oil within two years," Dr. Fieldner said:

"It is evident that the post-war trend probably will be in the direction of greater conservation of our nationl petroleum resources and in their more effective utilization. War-time progress in the production of high-octane aviation gasoline may lead to its use in improved types of high-compression internal combustion engines designed to obtain more mileage per gallon.

"If prices of motor fuel rise because of decreasing supplies, more attention may be given to secondary recovery from depleted fields and to the application of more expensive refining processes, such as pressure-hydrogenation of low-grade crudes. It is probable, also, that the Fischer-Tropsch process will be applied to the conversion of natural gas to gasoline. Large reserves of natural gas are available for such conversion in parts of the United States remote from our present centers of population and industrial activity.

"If these and other technical developments, together with the conceivable importation of oil from foreign sources, fail to meet the demand, prices may advance to the point where the production of liquid fuel from oil shale, coal, lignite, and renewable vegetable sources will be economically feasible."

Hydrogenation Possibilities

Dr. Fieldner said that most of the nation's bituminous coals and lignite can be liquefied by the Bergius pressure-hydrogenation process and that all ranks and grades of coal can be converted to liquid fuel by way of water gas.

"Both processes (Bergius and Fischer-Tropsch) are in commercial use in Germany," Dr. Fieldner continued. "There more than half of the supply of gasoline is thought to be made from bituminous and brown coal. Costs by these methods are estimated to be three to four times that of producing gasoline from petroleum in the United States."

In reviewing fuel resources of the nation, Dr. Fieldner said that estimates of the total national reserves of petroleum cannot be made, but that figures must be based on proved reserves.

"The Committee on Petroleum Reserves of the American Petroleum Institute estimated the proved petroleum reserve to be 21.2 billion barrels on January 1, 1942, and 20.7 billion barrels on January 1, 1943," he added. "Reserves during the last five years have been kept up by extensions and revisions of estimates of reserves in old fields rather than the discovery of new fields. Regardless of whether we are on the threshold of a permanent decline of petroleum production or whether new discoveries will postpone this period for several decades, it is evident that our reserves of gas and petroleum are small compared to reserves of coal."

He said the deposits of oil shale, largely in the Rocky Mountain states, are estimated to contain a potential supply of 92 billion barrels of crude oil—sufficient to maintain the 1941 annual rate of oil production for 65 years.

The ultimate reserves of natural gas cannot be estimated, Dr. Fieldner explained, but he pointed out that the estimated proved reserve as of January 1, 1942, was 85 trillion cubic feet.

"At the 1941 rate of 2.77 trillion cubic feet of production per year, this amount would last 30 years," he continued. "Here, also, new sources may be discovered and the life of the fields, no doubt, will be extended greatly as growing social control will prohibit waste and low-grade use of this ideal fuel."

Dr. Fieldner said that the original reserves of coal and lignite were estimated to have been 3.2 trillion tons, and he explained that not more than two per cent of the original supply of bituminous coal and about 30 per cent of the anthracite have been exhausted.

"At the 1941 rate of energy consumption, assuming that coal will carry the load if and when oil, gas, and oil shale are exhausted, and allowing 30 per cent for mining losses, coal would last 1,500 to 2,000 years," Dr. Fieldner asserted. "However, there certainly will be an increase in energy demand; an increase at the rate of increase prevailing during the 1920's would cut the period to some 500 years, and shortage of supply would be felt in the Appalachian field in a hundred years."

During 1943, various branches of the coal-mining industry are aiming for an all-time high of 665 million tons of coal, of which 600 tons will be bituminous and lignite, the Bureau official stated.

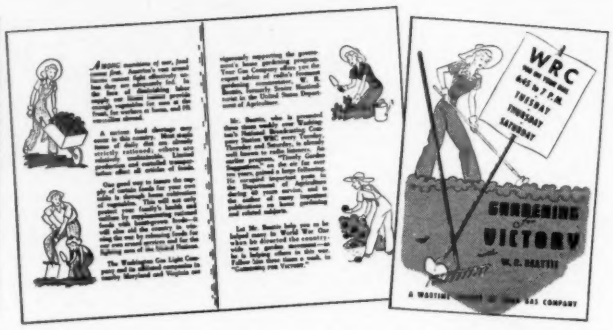
Segeler Says "We'll Always Need Gas"

A THOUGHT-PROVOKING article entitled "We'll Always Need Gas," by C. George Segeler, utilization engineer, American Gas Association, was published as the leading feature of the May 13 issue of *Public Utilities Fortnightly*.

Mr. Segeler presents an impressive array of facts to support his thesis that the gas industry is indispensable to the nation's economy in war or peace. While citing the many developments of recent years which have made possible its vital war contributions Mr. Segeler clearly indicates that the industry's growth is not of the "War Baby" variety but of a permanent and progressive nature.

His analysis includes both the manufactured and natural gas branches of the industry.

Gas company envelope containing gardening book has this imprint



Inside center spread and cover design (right) of attractive bill stuffer carrying information on Washington's "Gardening for Victory" program

Washington Radio Program Spurs Victory Gardening Campaign

W. R. Beattie

THE Washington Gas Light Company, which is located at the source of much of the Government's wartime consumer services, has seized upon a unique opportunity to make certain valuable information available to the public of greater Washington directly through a recognized authority.

The subject is victory gardening; the authority, W. R. Beattie, former senior horticulturist of the Department of Agriculture and author of the department's standard manual "The City Home Garden." This official publication, which has been the foundation for many popular gardening guides currently offered by newspapers and others, has been quoted daily in the victory garden series appearing in the columns of a leading Washington daily.

A radio program on gardening information is conducted three times weekly by Mr. Beattie who for years has been prominently identified with this subject. He was the moving spirit in the Department of Agriculture's World War I national gardening campaign. His "Gardening for Victory" talks over NBC's Washington station WRC are designed to induce more people to undertake home gardening as well as to assist them in their various problems.

Radio listeners requesting it are mailed a copy of the city home gardening booklet in an attractively printed gas company envelope. As it is distributed in the original Government printing office form, it carries no gas company imprint; however, a mimeographed sheet of the author's late corrections, which is inserted, carries reference to the gas company's part in making it available.

The radio broadcasts are supported by bill inclosures, newspaper advertising, truck posters and floor displays. Indications are that they are being well received, particularly in view of the important position Mr. Beattie occupies in Washington and throughout the country.

The Washington company's gardening commentator has contributed in past years to a popular network broadcast, the National Farm and Home Hour, in addition to conducting a local series of broadcasts almost continuously since 1930. He served as extension horticulturist and senior horticulturist in the Bureau of Plant Industry in the Agriculture Department from 1918 to 1940, his association with the department dating back to 1899.

A close working arrangement between Mr. Beattie and the Washington Victory Gardening Committee of OCD has been established. The former cooperates through a radio appeal in obtaining garden plots for the use of those who do not have suitable ground of their own available. As far as practicable the miscellaneous inquiries resulting from the broadcasts are directed to the committee for handling.

Present plans provide display lobby exhibition of entries in a Victory Gardening contest which the local committee has announced.

One phase of the broadcasting program will deal with canning, the Home Service Department of the gas company cooperating. It is the plan of the Washington Gas Light Company in sponsoring the home gardening information service to cover all of the processes of production and preservation of food—all the way from planting the garden and caring for it through harvesting and into canning, dehydration and storing.

The time allotted to this gas company radio feature—6:45 to 7:00 P.M., Tuesday, Thursday and Saturday, gives the sponsor an opportunity to introduce its own institutional advertising messages as well as publicize current matters of patriotic and civic importance.

Portable Pipe Lines

PORTABLE pipe lines that can readily be moved for installation over difficult terrain to carry gasoline supplies to motorized units in the field, have been developed by the Army. The new pipe line comes in self-contained half-mile units, each complete with a centrifugal pump driven by a 20 horsepower gasoline engine, according to "Army Motors," publication of the Motor Transport School at the Holabird Quartermaster Depot, Baltimore, Maryland. Each half-mile unit can be moved by cargo trucks and used independently of any other unit.

These self-contained sections, alone or in combinations, are said to be able to deliver gasoline through swamps and forests or over mountains at a rate of approximately 200 gallons per minute. The pipe also can be used to assist or even replace floating gasoline tanks for ship-to-shore operations.

Offers Cooking Charts

EVERYBODY knows that shortage of experienced help, almost daily labor turnover, inefficient operation of equipment, and consequent waste of food and fuel are problems that threaten the sanity and solvency of commercial and institutional kitchen operators, today. Now somebody proposes doing something constructive about them.

The constructive action is an educational program launched by the Robertshaw Thermostat Company for the benefit of harassed kitchen operators. As explained by W. D. Crouch, manager of Robertshaw's Industrial and Commercial Division, the program comprises five complete, but simple and understandable charts covering the correct operation of thermostatically equipped roasting and bake ovens, deep fat fryers, coffee urns and steam tables. A means is provided for making these charts readily avilable to utility companies who may desire them for distribution among their commercial customers.

The charts are 10" x 15" in size, printed in two colors, varnished for durability, punched for easy hanging and have been compiled from authoritative information. A slight charge is made toward cost of production, handling and mailing. Utility companies desiring information about sets for distribution should address Robertshaw Thermostat Company, 30 Church Street, New York.

1942 Code Available

THE 1942 Code for Pressure Piping has been approved by the American Standards Association as of November 6, 1942. Copies of the Code may be purchased from the office of the American Society of Mechanical Engineers, 29 West 39th Street, New York City.

Safety Trends

Contributed by the Accident Prevention Committee
Edited by W. T. Rogers, Ebasco Services Inc., New York, N. Y.

TRAINING NEW EMPLOYEES

A. W. BREELAND, supervisor of safety, Lone Star Gas Company, Dallas, Texas, submits some valuable thoughts on the safety man's job in a recent letter to the editor. Mr. Breeland says:

"It occurs to me that two of the major problems confronting the Safety Engineer or the Manager during the present emergency are: first, training the new employee, and second, absenteeism.

"We know from past experience that our accident frequency rate will vary almost in direct proportion to the number of new and unskilled employees on the job. That was true even when we were able to obtain younger employees more alert physically and mentally. Now that our new employees are older men, less agile physically and perhaps with somewhat slower reaction mentally, the problem of the new employee has increased.

"With the scarcity of manpower, it is the natural tendency to let down the bars insofar as physical requirements are concerned. Every possible effort should be made to obtain employees who are physically qualified to do the job required of them without endangering their fellow employees or the public.

"Once the prospective employee has been selected physically, the training or teaching program should begin. From personal experience, I can offer no better suggestion than the J.I.T. method used so successfully in war industry plants in getting the new employee sufficiently trained to carry on with a reasonable degree of efficiency in the shortest possible time."

ABSENTEEISM

IN connection with absenteeism, Mr. Breeland says: "Sickness and accidents are two of the main causes of absenteeism. However, only a small part of the time being lost is due to accidents in line of duty. Since there is a considerably larger number of employees being injured off the job than on the job, it appears that Safety Engineers and Personnel Directors should put forth even greater efforts than ever before to promote safety and health away from the job.

"The majority of us have a tendency to let down somewhat when we get away from the job. We have been taught for years that we should relax during our off hours in order to allow our minds and bodies to be rehabilitated and refreshed to enable us to do better work when we return. With our Nation at war and manpower more vital than ever before in its history, no effort should be spared to promote off-the-job safety as one means of combating absenteeism."

LEARNING FROM THE EXPERIENCE OF OTHERS

EMPLOYEE was helping to pick up a length of pipe. When opposite end was raised, he stumbled and fell, mashing hand between pipe and ground. Cause: doing work hastily and in a mechanical manner, and failing to observe working conditions.

Employee was using file without handle and while carrying same in pocket, he stuck end of file in arm. Cause: failure to provide handle cover, failure to carry tools properly. Also, very likely that no regular tool inspection was being made by supervisors.

Employee slipped on oil floor while loading heavy object, suffering sprained wrist. Cause: failure of department to clean floors properly, also failure of injured employee to observe working conditions.

Employee was tapping gas main and when tapping machine was removed, scale was blown into eye, causing serious injury. Cause: failure to wear goggles. Goggles should be worn while doing this type work regardless of pressure on main.

While using chisel, sliver of steel flew against head of fellow workman, cutting blood vessel, resulting in severe hemorrhage and metal embedded in skull. Cause: apparently, lack of proper inspection. Since metal was found to be not defective, it is evident that burr-headed tool was sole cause.

After cleaning metal parts with strong caustic solution, employee put finger to eye, resulting in eye infection and narrow escape from loss of vision. Cause: employee was working without gloves or goggles, although given orders to do so. When any work is done with strong caustic, acid, or similar solutions, gloves must be worn and goggles likewise worn to protect the employee.

While excavating, employee hit hand against sharp rock on wall of excavation, suffering severe cut which later became infected. Cause: infection due, of course, to failure to receive first aid and subsequent medical attention. Employee should have been instructed how to work and warned to recognize the danger of hand injury when improper swinging of pick or shovel was made.

While unloading coke, employee was struck on hand by other employee's fork, resulting in severe lacerations. Cause: employees working too close in confined area and failure to observe surroundings.

Service man was changing tire on truck. While hammering deflated tire off rim, the truck rolled off the jack and jack handle struck employee on leg, inflicting deep cut. Cause: failure to properly wedge wheel of truck to prevent rolling down grade. In this case, truck was headed down grade and rear tire was being changed, which should have suggested to employee that front wheel of truck should have been parked against curb.

Employee mashed hand between wrench and cylinder stud. Cause: working in confined space without consideration for swing of hand, or failure to properly engage wrench.

A garage employee was making a routine weekly tire check on a company truck to insure proper inflation pressure. As he was checking the spare tire, mounted horizontally underneath the rear of the truck body, the locking rim became released and the inner tube blew out because of resulting rim-cut. The blast effect of this was so great that the employee was blown fifteen feet diagonally from the rear of the truck and, fortunately, landed in a stack of spare tires piled on the floor of the garage, miraculously escaping very serious injury.

An investigation of this accident disclosed that the reason for the failure was that the rim had been improperly installed on the tire some two years ago. Further investigation definitely brought out that few men realize the serious possible exposure from improperly mount-

The harm caused by absenteeism is brought to the attention of employees in the war production plant of Servel, Inc., Evansville, Ind., where 250 of these posters are displayed in key positions. The poster shows a machine gunner killed in the line of duty because his supply of ammunition ran out

ing such a rim as well as what constitutes proper mounting of *truck* tire.

In order to prevent a recurrence of this type of accident, the following recommendations are offered:

(1) This work should not be attempted by any truck driver unless he has been specifically trained and approved as qualified by the garage foreman. Where this is not the case, all such truck tires should be mounted by a reputable commercial truck tire repairman at his place of business.

(2) When removing the tire ring, great care should be exercised not to bend the ring. Most difficulty is experienced because in removing the ring, usually it is pulled at right angles to the tire instead of outward at right angles to the axle of the tire. When once a ring is sprung or bent or twisted, it is almost impossible to make it fit properly in spite of all the hammering that is usually done on it.

(3) When replacing the tire ring, do not use a bent ring in mounting a tire. If it cannot be straightened beforehand, do not try to straighten it by banging it with a hammer. It may spring temporarily into place, but will not be properly seated. Rather than use a bent ring, obtain a new ring and install it.

(4) When putting on a ring, it may be necessary to partially inflate the tube in order to force the bead of the tire shoe to the fixed lip surface around the rear periphery of the rim. Never allow this pressure to exceed ten pounds and when applying it, make sure to face the locking ring in a "safe direction" so that if it does fly off, it will not cause any injury or damage.

(5) After the ring has been snapped into place, check very carefully to make sure that it *fits perfectly around the entire periphery of the rim* and apply air pressure while standing in the clear.

On Routine Tire Pressure Check

(1) Always first check the tire locking ring to make certain that it is absolutely in place before attempting to further inflate the tire.

(2) In those cases where the spare tires are mounted horizontally and it is impossible to ascertain whether or not the ring is perfectly seated, it is suggested that while maintaining a position as far in the clear as possible, the air is let out of the tire and the spare tire removed to make certain that we know that the ring has been checked at least once, for each truck. After this has been done once, it is felt that subsequent checking will not require the taking out of the spare tire because our present strict tire checking and recording procedure should immediately disclose when once a tire has been rotated from any place on any truck.

(3) When checking the air pressure on dual wheels, stand as far in the clear as possible and do not face the tire, but turn head so that eyes will not be affected by the blast should a tire blow out at the time the inflation takes place.

If there is any question about any of the points above discussed, consult with your garage foreman so as to minimize the possibility of your being a victim of this type of accident. Whenever there is any doubt in your mind and where there is no garage foreman present, always have this work done by an outside reputable tire dealer.

Laboratories Will Issue New Research Bulletin

Extensive Data Presented On Flash Tube Lighting of Gas Range Ovens and Broilers

A RESEARCH bulletin of the A. G. A. Testing Laboratories covering automatic flash tube and pilot ignition of gas range oven and broiler burners operating on manufactured gases has been submitted to members of the Committee on Domestic Gas Research for review and approval prior to publication. It forms one of a series devoted to various phases of a comprehensive program of research on domestic gas appliances sponsored by this group. Coming at a time when so much attention is being devoted to development of equipment for the post-war period, its findings possess special significance.

Various methods of automatic ignition of oven burners are reviewed and development of flash tube applications as well as service experiences with such systems are outlined. As an introduction to studies on flash tubes a full discussion is given of automatic ignition systems employing constant burning pilots and automatic valves as well as a description of such systems now in common use. While automatic top burner lighting by use of flash tubes was thoroughly covered in a previous bulletin, many questions have arisen on the ignition of oven burners using flash tubes from the top burner pilot. Successful applications of such systems present numerous complications not encountered in top burner lighting. Little scientific information has hitherto been available to indicate the importance of different variables for the assistance of those wishing to design suitable flash tube systems. This has been provided by the study now reported.

The main portion of the new bulletin is devoted to results of an intensive study of the effect of such features as shape of flash tubes, relation between their diameter and length, area and position of relief openings, tube restrictions, relationship between lighter port sizes input rating and diameter of tubes, and numerous others. One of the most striking findings is the length of flash tube which may be employed with satisfactory ignition providing adequate diameter is employed. While the maximum length of a vertical tube of .31 in. I. D., permitting proper lighting was 1 ft., this could be increased to 10 ft. with satisfactory ignition when a tube of ¾ in. I. D. was employed. Use of relief openings of proper size near the top of the vertical section of flash tube, as well as presence of cones at the bottom of the tubes, was found to increase their range of satisfactory operation. Likewise use of larger radius of curvature in the case of curved tubes was found to increase range of operation.

Employing the principles determined from this study, successful application of flash tube systems were made to contemporary ranges including one equipped with a high boiler. These experimental systems gave more rapid and more consistent oven and broiler ignition than was obtained by using a commercial flash tube assembly of the type formerly furnished. As its service record has been quite satisfactory over a period of years, flash tube assemblies embodying the refinements and improvements resulting from the present investigation may logically be expected to bring about still further improved performance.

Studies reported in this bulletin are confined to those obtained with manufactured gases of types commonly distributed. Similar studies covering natural gas will be presented in a later publication.

Gas in Pittsburgh Radio Topic

A FOUR-CORNERED interview with three outstanding executives of the natural gas industry in the Pittsburgh district was featured in the radio program "Editor's Round Table" broadcast Saturday, May 8, at 10:15 to 10:45 P.M. over station KQV Pittsburgh. Acting as moderator, William N. Robson, editor of "City Hall News," questioned C. E. Bennett, president, Manufacturers Light and Heat Company; D. P. Hartson, vice-president and general manager, Equitable Gas Company; and John J. Jacob, Jr., vice-president and manager, The Peoples Natural Gas Company.

Covering the topic "Natural Gas in the War Effort," the interview brought to the radio listeners such interesting bits of information as the following:

"In the year 1942 in the Pittsburgh area, more natural gas was used by industry than by domestic consumers. The combined figures for the three companies show that nearly 60 per cent of total gas sales were to industrial customers."

"Industrial customers are using almost twice as much natural gas as in 1940—and most of it is being used in the manufacture of ships, guns, shells, bombs, and a lot of other vital war material, including gun mounts, roller armorplate for ships, forgings for tanks and armored

cars, gas masks, optical lenses for range finders, binoculars, shell detonators, airplane propellers, timing devices for shells, torpedoes and bombs, and a wide variety of motors, generators, turbines, and other machinery."

"Gas, because it can be accurately controlled, and because it is flexible, and quick heating, is peculiarly well suited to the type of precision manufacture required for war materials. . . . . It is a high-speed precision fuel."

Hold Air Conditioning Conference in South

LOOKING toward expansion of markets for gas service after the war, particularly to securing added summer load for leveling up the huge mid-year dip in gas sendout, a utility-manufacturer joint conference was held recently in the South—where bulk of the field work along these lines has been concentrated.

Participating companies were United Gas Corporation in Houston, New Orleans Public Service, Inc., and Servel, Inc., with about 50 executives, department heads, engineers and servicemen attending. This was in fact the fourth consecutive annual meeting arranged between these pioneering utilities and the equipment manufacturers cooperating with them.

W. F. Friend, Ebasco Services Inc., New York, N. Y., and G. Elmer May, New Orleans Public Service Inc., New Orleans, La., represented the A. G. A. Joint Committee on Summer Air Conditioning at this meeting. Mr. May is chairman of the Technical Advisory Subcommittee of the Joint Committee.

Internal Auditing Book

A NEW book, "Internal Auditing—A New Management Technique" has just been published by the Institute of Internal Auditors. The Institute was organized in 1941 and this, its first publication, is particularly important at this time when the change to war production and the pressing haste of war business makes it impossible or impracticable to maintain established peacetime managerial and accounting controls. It fills an important need in accounting and management literature. Copies may be obtained from Brock and Wallston, 39 Atlantic Ave., Stamford, Conn., at a cost of $3.50 per copy.

A.G.A. Address

THE Post Office Department has requested that the delivery district number be included in the address of the Association. All mail should, therefore, be addressed: American Gas Association, 420 Lexington Avenue, New York 17, N. Y.

NEW MEMBERS OF THE A.G.A.

GAS COMPANIES

	Delegates
Ambridge Gas Company, Ambridge, Pennsylvania	W. D. Ashenhart
Billings Gas Company, Billings, Montana	J. E. Moore
City of Uvalde, Gas Department, Uvalde, Texas	R. W. Evans
Mount Carmel Public Utility & Service Company, Mount Carmel, Illinois	A. A. Barnhard
Virginia Public Service Company, Newport News, Virginia	A. W. Olsen
Willmar Gas Company, Incorporated, Willmar, Minnesota	C. E. Tenney

INDIVIDUAL MEMBERS

C. Robert Angell	Michigan Public Service Commission, Lansing, Mich.
Grice Axtman	Southern California Gas Company, Los Angeles, Calif.
Kathryn Lillian Barnes	Equitable Gas Company, Pittsburgh, Pa.
Marshall B. Belden	Canton, Ohio
F. W. Bishop	Northwest Cities Gas Company, Astoria, Oregon
Howard H. Blackburn	Southern Counties Gas Company, San Pedro, Calif.
E. V. Bowyer	Roanoke Gas Company, Roanoke, Virginia
Wm. J. Brennan	Ingersoll Rand Company, San Francisco, Calif.
Robert B. Bruce	Southern Counties Gas Company, Santa Maria, Calif.
H. Ward Cheeseman	The Sprague Meter Company, Bridgeport, Conn.
Thos. J. Chute	Southern Counties Gas Company, Santa Maria, Calif.
Hance H. Cleland	San Diego Gas & Electric Company, San Diego, Calif.
J. R. Cole	Southern Union Gas Company, Santa Fe, New Mexico
R. E. Cole	Husum, Washington
I. L. Comstock	Coast Counties Gas & Electric Company, Santa Cruz, Calif.
Paul E. Cook	San Diego Gas & Electric Company, San Diego, Calif.
E. J. Cordrey	Southern California Gas Company, Los Angeles, Calif.
Albert F. Craver	The Cleveland Heater Company, Cleveland, Ohio
Margaret A. Crooks	Iowa-Illinois Gas & Electric Company, Rock Island, Ill.
Malcolm G. Davis	Gilbert Associates, Inc., New York, N. Y.
Gordon G. Dye	Southern California Gas Company, Los Angeles, Calif.
Walter H. Ferguson	Equitable Gas Company, Pittsburgh, Pa.
Allen T. Fesler	Southern Counties Gas Company, Santa Maria, Calif.
W. G. Forshaw	Northwest Cities Gas Company, Walla Walla, Wash.
M. B. Graham	Day & Night Manufacturing Company, Monrovia, Calif.
Harry A. Grassman	The Inner-Tite Div. of Yara Engrg. Corp., Elizabeth, N. J.
Forrest Hartzig	Southern California Gas Company, Los Angeles, Calif.
E. F. Hawkesworth	Southern California Gas Company, Los Angeles, Calif.
J. H. Hull	Coalinga, California
Walter E. L. Irwin	Philadelphia Electric Company, Ardmore, Pa.
Elton Johnson	Southern Counties Gas Company, Pomona, Calif.
Wm. Johnson	Standard Pacific Gas Line, Inc., Tracy, Calif.
J. F. Johnston	The B. F. Goodrich Company, Akron, Ohio
Roy E. Jones	North Shore Gas Company, Winnetka, Illinois
Austin S. Joy	Industrial Engineering Company, Wilmington, Calif.
E. A. Kelley	Gas Consumers Association, Philadelphia, Pa.
Paul R. Kennedy	Equitable Gas Company, Pittsburgh, Pa.
Arthur L. Lane	The Detroit Edison Company, Port Huron, Michigan
E. F. Lorman	Day & Night Manufacturing Company, Monrovia, Calif.
John A. Madsen	Brighton Gas Company, Ltd., Brighton, Victoria, Australia
Edward Marquart	Southern Counties Gas Company, Lompoc, Calif.
Wilbur Masheter	Southern Counties Gas Company, Venice, Calif.
W. C. Matheson	Eclipse Fuel Engineering Company, San Francisco, Calif.
James J. McGowan	Gas Consumers Association, Pittsburgh, Pa.
J. R. McKnight, Jr.	Southern Counties Gas Company, Los Angeles, Calif.
Ransom M. Middleton	San Diego Gas & Electric Company, San Diego, Calif.
Roy K. Murduck	Kansas City Gas Company, Kansas City, Missouri
Osmon T. Nelson	Northwest Cities Gas Company, Lewiston, Idaho
Paul E. Nelson	Gas Consumers Association, South Norwalk, Conn.
L. E. Osmer	Semet Solvay Engineering Corp., Chicago, Illinois
James C. Reid	Southern Union Gas Company, Dallas, Texas
F. Ray Schallert	Southern Counties Gas Company, Santa Maria, Calif.
Dwight L. Schieber	Hope Producing Company, Monroe, Louisiana
Jack Serbian	Southern Counties Gas Company, Santa Maria, Calif.
Chester E. Shaffer	Koppers Company, Kearny, New Jersey
Louis R. Snelling	The National Radiator Company, New York, N. Y.
Robert E. Strand	Southern Counties Gas Company, Santa Monica, Calif.
J. Kenneth Vetter	Gas Consumers Association, Washington, D. C.
Carl Watson	Arkansas Western Gas Company, Paris, Arkansas
*Clyde Watts	Payne Furnace & Supply Company, Beverly Hills, Calif.
J. A. Weber	Southern California Gas Company, Los Angeles, Calif.
C. C. Westmoreland	Southern California Gas Company, Los Angeles, Calif.
C. R. Wiedeman	Southern California Gas Company, Glendale, Calif.

* Now in military service.

A.G.A.E.M. Reorganizes To Increase War and Post-War Effectiveness

H. Leigh Whitelaw

MEETING April 28 in Cincinnati, the board of directors of the Association of Gas Appliance and Equipment Manufacturers completed a program of reorganization designed to increase the organization's effectiveness during the war and post-war periods. The board ratified changes made by a committee on reorganization composed of Lyle C. Harvey, Bryant Heater Company, John Van Norden, American Meter Company, and John A. Fry, Detroit-Michigan Stove Company.

As a result of the reorganization, H. Leigh Whitelaw of the Jones and Laughlin Steel Corp., Pittsburgh, formerly an executive of American Radiator Company and American Gas Products Corp., was appointed managing director of the Association. Leonard Macomber was named Washington representative, replacing A. F. Cassidy who is entering the armed forces, and George H. Richards was selected as legal counsel.

Leonard Macomber

In his reorganization report, Mr. Harvey stressed the fact that the new officials would bring closer relations with the American Gas Association and its Testing Laboratories, and would offer new and vital services to A. G. A. E. M. members. President W. F. Rockwell also emphasized closer ties with A. G. A. and cooperation with gas utility plans for the post-war period. Mr. Macomber announced that, among the new services, would be a bulletin to members covering Washington developments and trends. New Washington offices have been established in Room 527, Munsey Building, with the same telephone number as heretofore, EXecutive 0517.

The new managing director, Mr. Whitelaw, who was selected unanimously by the committee, brings to his post a wealth of experience, having spent most of his business life in the gas and allied industries. Born in Toronto, in 1888, he was three years old when his family moved to Norwich, Conn. He was educated in the United States, and was trained as a production man in American Radiator plants at St. Louis, Buffalo, and Brantford, Ont. In 1913 he became manager of the smokeless boiler department of the American Radiator Company.

In 1917-1919 Mr. Whitelaw was an administrative officer of the Royal Flying Corps and the Royal Air Force. He returned to American Radiator in 1919, and later became executive vice-president of the American Gas Products Corp., New York City.

In following years, Mr. Whitelaw was active in the American Gas Association, being a member of several committees and serving as sectional vice-president and chairman of the Manufacturers' Section in 1927-'28 and 1928-'29.

When the American Gas Products Corp. was dissolved in 1939, Mr. Whitelaw accepted a position with the Jones and Laughlin Steel Corp., Pittsburgh, Pa., specializing in gas transmission and distribution. On April 1 of this year, he resigned to become managing director of the A. G. A. E. M.

Mr. Macomber has had wide engineering experience in many parts of the world, and for three years was connected with the Federal Housing Agency, the War Production Board and the U. S. Maritime Commission. He is a native of Boston and was educated there.

Engaged in civil engineering and construction work, Mr. Macomber entered the U. S. Army in 1918 and was commissioned a captain in the Chemical Warfare Service. He located in New York in 1919 and returned to civil engineering, specializing in the design and construction of golf courses, airports, water works, sewer systems and subdivisions. He handled contracts in many parts of this country as well as in Chile, Peru, Argentina and Brazil.

Two years later Mr. Macomber moved to Chicago and established his own engineering firm; in 1935 his work took him to the Soviet Union. A year later he joined the FHA on inspection of housing projects, and then engaged in consulting work until January, 1941, when he became associated with the WPB on priority matters.

In September, 1942, Mr. Macomber was made assistant to the director of the Production Division, U. S. Maritime Commission, under Col. W. F. Rockwell, who is president of the A. G. A. E. M. Mr. Macomber represented the Maritime Commission on several WPB committees.

George H. Richards

Mr. Richards has been a member of the bar of the State of New York since 1907, and has wide experience in corporate legal practice. Since 1911 he has been a partner in the firm of Reynolds, Richards and McCutcheon, New York City. His services were obtained for the association as the result of strong endorsement by several members.

C. Edwin Bartlett, (center) Mayor of the Gild of Ancient Supplers, flanked by Alderman Frank C. Pacher, Beverly Hills, Calif., and Senior Warden Joe A. Mulcare, New York, at the Gild Wassail in Cincinnati

Gild Wassail

A NEW enjoyable event of the Distribution Conference in Cincinnati was the Wassail given by the Gild of Ancient Supplers Thursday afternoon, April 29, from four to seven.

This was the first time the popular Gild Wassail which heretofore has been held only at the Annual A. G. A. Conventions was scheduled at a sectional meeting.

Over two hundred Supplers and Burghers, after the serious conferences and discussions earlier in the day, attended the Wassail and enjoyed the few gay and carefree hours for which the Gild Wassails are justly noted.

"Cap" Higgins Now a Major in Active Service

Major Higgins

A. E. HIGGINS, vice-president and sales manager for the Pittsburgh Equitable Meter Company—Merco Nordstrom Valve Company, Pittsburgh, Pa., was commissioned as Major in the U. S. Air Corps on May 8, 1943. He was called immediately for active duty. A veteran of World War I, Major Higgins has held a Reserve Officer's Commission for many years.

Prior to associating with the Pittsburgh firm he served as secretary of the Natural Gas Department of the American Gas Association.

Major Higgins originally qualified as an Army air pilot in 1918. He has since flown his own plane throughout his business career, and enters the Air Corps with over 6000 hours solo credit.

Personal AND OTHERWISE

Directs WPB Natural Gas Division

Paul R. Taylor

APPOINTMENT of Paul R. Taylor, Upper Montclair, New Jersey, as director of the Natural Gas Division was announced May 17 by J. A. Krug, director, Office of War Utilities.

Mr. Taylor has been vice-president of Stone and Webster Service Corporation, New York City, and has had extensive experience in all phases of the public utility business. He has been active in the American Gas Association and is a member of the Managing Committee of the Natural Gas Section.

He is a native of Indiana and a graduate of Purdue University, in mechanical engineering. After serving in the Aviation Section of the Signal Corps in World War I, Mr. Taylor became city manager of Grand Haven, Michigan, where he was in charge of municipal water and electric utilities. Before joining Stone and Webster, Mr. Taylor was vice-president of the National Gas and Electric Corporation at Benton Harbor, Michigan.

The position of director of the Natural Gas Division of OWU has not been filled heretofore.

H. W. Carey Heads New Production Dep't

CREATION of a department through which production, engineering and geological work will be handled has been announced by the Houston Natural Gas Corp., Houston, Texas. Chosen to head this department with the title of production engineer is Hillard W. Carey, who assumed his new position April 16.

After graduating from the University of Oklahoma in 1933, Mr. Carey entered the employ of the Halliburton Oil Well Cementing Company, and in June of the next year was given additional responsibilities and placed in charge of the oil and gas producing interests of Erle P. Halliburton, Inc. This new assignment included organizing and expanding the geological department of the Halliburton interests relative to the exploration of oil and gas, the interpretation of new geological and engineering data, and close association with electrical logging and exploration methods.

Mr. Carey is an active member of the American Association of Petroleum Geologists, American Institute of Mining and Metallurgical Engineers, and the American Petroleum Institute. He is also secretary of the Houston Geological Society, an affiliate of the American Association of Petroleum Geologists, and a registered professional engineer.

Wins McCarter Award

RALPH H. MASON, Eastern Gas and Fuel Associates, Everett, Mass., has been awarded a McCarter medal and certificate by the American Gas Association for having performed an outstanding act of life saving. The medal was presented to Mr. Mason on April 30 at a special meeting attended by the supervisory force at the Everett plant.

The McCarter award is made for successful application of the Schafer prone pressure method of resuscitation.

Reelected Chairman of Safety Council

Clifford E. Paige

CLIFFORD E. PAIGE, president of The Brooklyn Union Gas Company, was re-elected chairman of the Executive Committee of the Greater New York Safety Council at the annual meeting held last month in New York.

Frank L. Jones, vice-president of the Equitable Life Assurance Society, and president of the council, reported that its safety activities have trebled in the past year due to wartime needs. Among the projects sponsored by the New York council is a plant victory program which, through prescribed courses of instruction, is expected to cut the plant accident rate 30 per cent by October 1.

Safety Equipment Conservation

COPIES of a booklet, "How to Make Your Safety Equipment Last Longer," have been made available without charge by the Mine Safety Appliances Co., Pittsburgh, Pa. Purpose of the booklet is to help extend the useful life of equipment. It covers in detail safety-equipment conservation and maintenance.

Honor North Shore Gas Veterans

Service buttons signifying that they have been employed by the North Shore Gas Company, Waukegan, Ill., for 25 years or more were presented to this group of veterans on April 26 by A. W. Conover, president of the company. In the front, left to right are: George McDonald (35 years of service), William Welch (46), President Conover, James R. Hess (37) and Tony Jeronik (35). Second row: Frank Gastisa (26), W. E. Fritz (26), Joseph Hoff (29), William Dorick (31), M. C. Jacobson (28), and J. G. Hart (26). Back row: Harold W. Dunn (25), Thomas P. Clark (31), James Bellcom (31), William Brandt (30), and E. H. Peterson (25). Three members of the Quarter Century Club, A. C. Winters and J. W. Sykes, both with 26 years of service, and Ludwig Butwil, with 30 years, were not present when the picture was taken

On A. G. A. Domestic Gas Research Committee

J. J. Quinn

LATEST appointments made by President Arthur F. Bridge to the Committee on Domestic Gas Research are J. J. Quinn, general sales manager, Boston Consolidated Gas Co., Boston, Mass., and Watson E. Derwent, vice-president, George D. Roper Corporation, Rockford, Ill.

Mr. Quinn is regarded as one of the most aggressive sales managers in the East. His interest in developing new and better gas appliances extends back a number of years. In addition to serving as a member of the Committee on Domestic Gas Research, he is chairman of a committee of representatives of New England gas companies which is seeking to develop a package unit for cooking and kitchen heating designed especially for meeting New England conditions.

W. E. Derwent

Mr. Derwent, a past president of A.G.A.E.M. is well known as a leader in gas range circles. He has served on a number of A. G. A. committees and brings to the Committee on Domestic Gas Research a wide experience in development and promotion activities.

The addition of these two gentlemen greatly strengthens the personnel of the Committee on Domestic Gas Research.

Hallock Retires; Won Munroe Award in 1935

Frank L. Hallock

FRANK L. HALLOCK, who was with Consolidated Edison Company of New York, Inc., and its system companies for thirty-three years, retired on May 1, 1943. He received the highest award of the gas industry, the Charles A. Munroe Award, in 1935 for his work in improving customer-employee relations.

Mr. Hallock has for many years been concerned with supervisory training and employee-customer relations. Several years ago he developed such training programs for the Consolidated Edison System, and when he retired he was in charge of district offices and customer service telephone divisions and of the employee training programs for the Commercial Relations Department, with the title of system commercial manager.

Mr. Hallock began his career in Consolidated Edison at the Northern Westchester Lighting in December 1910 as a bookkeeper. He served as chief clerk of the bookkeeping department for eight years, going in 1921 to Bronx Gas and Electric as superintendent of the commercial department. He was assistant secretary of that company for three years before he went to Consolidated Gas in 1930 to direct a customer contact training program for employees dealing with the public. When the Commercial Relations Department was established after the general merger of the gas and electric companies in the system in 1936, he was named a system commercial manager.

Mr. Hallock served as chairman of committees in the commercial and accounting sections of the American Gas and National Electric Light Association.

House Heating Council Elects Wollman

H. M. Wollman, Jr.

HARRY M. WOLLMAN, JR., house heating and industrial supervisor, Jersey Central Power and Light Company, was elected chairman of the Metropolitan (New York) House Heating and Air Conditioning Council at a meeting on May 19 in New York. William J. Schmidt, general sales manager, Long Island Lighting Company, was named vice-chairman, and John J. Wholey, sales manager, Rockland Gas Company, was chosen secretary-treasurer.

The entire meeting of the council was devoted to a discussion of post-war planning led by J. P. Leinroth, Public Service Electric & Gas Co., Newark. H. P. Morehouse, Public Service Electric & Gas Co., reported on the CP househeating program.

T. H. Kerr Accepts Research Post Following Retirement

T. H. Kerr

T. H. KERR, director and vice-president of The Ohio Fuel Gas Co., Columbus, until his retirement March 1 of this year, and nationally recognized authority on gas measurement, has accepted a position as fuels consultant on the staff of the Engineering Experiment Station of Ohio State University. He will study the future fuel supply of Ohio and the related Appalachian areas. While retiring from active participation in the management of The Ohio Fuel Gas Co., Mr. Kerr continues as a member of the Board.

After graduating from Carnegie Institute of Technology in 1909 he was employed by the Bovaird and Seyfang Co. of Bradford, Pa., as chief designer of oil country tools and equipment. While engaged in the design and testing of air-driven electric generating equipment in Pittsburgh, his work attracted the attention of H. C. Reeser, of The Ohio Fuel Supply Co., who sent him to Columbus, Ohio, to take charge of the measurement of gas for that company. In 1928 he was elected vice-president and director of The Ohio Fuel Gas Co.

He has to his credit, the development of numerous items now in common use by measurement engineers: e.g., the Edwards balance, the measuring float type differential gauge, the differential valve for the control of manifold meters, and several others.

In 1928 Mr. Kerr was appointed a member of the Main Technical and Research Committee of the American Gas Association, and somewhat later of the Meter Subcommittee. He has served these committees continuously since their original appointment. On Sept. 25, 1931, he was selected as chairman of a committee consisting of three members of the Meter Subcommittee and a like number of members from the Third Meter Committee of the American Society of Mechanical Engineers.

This joint committee after extensive research formulated Gas Measurement Report No. 2, later published by both parent bodies, and since accepted as official standard for orifice meter measurements of gases and fluids by many of the gas and related industries. Subsequently with the assistance of the members of the joint A. G. A.-A. S. M. E. Committee, research has been conducted and report submitted on the effect of pulsation on orifice meter measurements.

Your War Bond deductions are weapons for our fighting men.

☆

March your $$$$ off to war. Buy more War Bonds.

AFFILIATED ASSOCIATION *Activities*

Pennsylvania Gas Association Holds Annual Meeting

W. G. B. Woodring

OPERATING manager W. G. B. Woodring, of the Allentown-Bethlehem Gas Co., was elected president of the Pennsylvania Gas Association at its 35th annual meeting, held May 4 at the Benjamin Franklin Hotel, Philadelphia. Other officers elected are: First vice-president, C. K. Steinmetz, Carlisle; second vice-president, L. C. Smith, Harrisburg; third vice-president, C. B. Melton, Waynesboro; secretary, William Naile, Lebanon; Treasurer, W. G. Sterrett, Jenkintown.

Members elected to council for three years are: H. S. Bair, York; W. J. Foster, Philadelphia; H. C. Gross, Chester; and J. M. Huebner, Lancaster. Elected to fill unexpired terms were: J. F. Jones, Kingston; W. G. Hamilton, Jr., Philadelphia.

New War Board Orders Predicted

Retiring President Frank W. Lesley, York, opened the conference by reviewing the year's work and praising committee activities. Ernest R. Acker, vice-president, American Gas Association and chairman, Committee on War Activities, was the feature speaker of the morning session. He predicted new government orders, to be issued about June 15th, enabling the building of larger stocks of oil this summer. He also said that the Petroleum Administration for War is considering compulsory conversion of all possible residential heating customers from gas to coal. He reviewed other war orders and activities, and praised P. T. Dashiell of Philadelphia for factual data he had provided to government agencies, giving them a better understanding of gas industry problems in relation to oil supplies.

Luncheon speaker was B. A. Seiple, chairman of the Residential Section of the American Gas Association, whose paper on "Gas Promotion and Sales During and After the War" appears in this issue of the MONTHLY.

The afternoon session was presided over by F. H. Trembly, Jr., Philadelphia, chairman of the papers and program committee. It opened with a discussion of "Appliance Servicing Looks Ahead" by Claude Hazel of Philadelphia. Fred LeFevre of Philadelphia discussed "Wartime Practices in Distribution" and described new methods and substitute materials in automotive, street and meter departments. H. B. Andersen of Philadelphia presided over the distribution section.

R. H. Whipple of Philadelphia presided at the production session and introduced Mr. Dashiell, who spoke extemporaneously on the history and practice of water gas manufacture. He said the flexibility of the water gas progress had been demonstrated fully by many changes in materials over the years as petroleum products varied in supply and price.

Wallace G. Murfit of Philadelphia closed the meeting with a discussion of "Personnel Manpower and Public Relations" as a feature of the Customer and Employee Relations Committee. He said that gas companies and other utilities like most American Industries, in the last decade had been "very successful with things, but relative failures with people."

At the evening banquet, Major Alexander Forward, managing director, A. G. A. told "What the War Is Doing to the Gas Industry." He said in part:

"The war has adequately and thoroughly impressed the Federal Government, the war agencies, the war industries, the armed forces and the civilian population with the vital and immeasurable importance of the gas industry. . . . One thing the war has not done to the gas industry; we have not been disrupted and forced to change our basic operations or our financial position as in the case of some industries. We are intact and so we shall be after the war . . . the war is giving to the gas industry a realization of its vital importance and a confidence in its future."

The convention heard an inspiring address by Merle Thorpe, editor of *Nation's Business*, Washington, D. C. Reports of officers and election of officers closed the meeting, which was followed by a program of entertainment.

Hold the torch of Freedom high and continue to buy War Bonds and more War Bonds to keep our future free.

Maryland Association Holds Conference

THE Spring conference of the Maryland Utilities Association was held Friday, April 30, at the Belvedere Hotel, Baltimore, Md. It was a combined meeting of the transportation, gas and electric groups of the Association and was well attended.

The meeting was opened at 1:15 P.M. with remarks by President Lewis Payne who introduced C. B. Melton, chairman of the combined meeting.

Speakers on the program were: T. P. Walker, president, Council of Electric Operating Companies; Capt. H. Cotton Minchin, British Embassy; E. J. Boothby, vice-president and general manager, Washington Gas Light Co.; Brig. Gen. William C. Rose, War Manpower Board; William E. Mitchell, vice-president and general manager, Georgia Power Co., Atlanta, Ga.

Officers re-elected for the 1943-44 term of office were: President—Lewis Payne, Eastern Shore Public Service Co., Salisbury, Md.; Vice-President—C. B. Melton, Hagerstown Gas Co., Hagerstown, Md.; Treasurer—D. C. Turnbull, Jr., Consolidated Gas Electric Light & Power Co., Baltimore, Md. Elected Secretary was J. L. Landon, Jr., Eastern Shore Public Service Co., Salisbury, Md.

Indiana Gas Association Elects Henry

GUY T. HENRY, president, Central Indiana Gas Co., Muncie, was elected president of the Indiana Gas Association at the thirty-third annual meeting of the Association held May 13 in Indianapolis. Clarence W. Goris, vice-president, Northern Indiana Public Service Co., Gary, was named vice-president, and Paul A. McLeod, division manager, Public Service Co. of Indiana, Inc., Gary, was re-elected secretary-treasurer.

New directors elected at the meeting are: A. E. Hatley, Central Indiana Gas Co., Marion; R. A. Gallagher, Public Service Co. of Ind., Inc., Indianapolis; H. G. Horstman, Public Service Co. of Ind., Inc., Indianapolis; and Dean T. Burns, Citizens Gas & Coke Utility, Indianapolis.

Advertised simply as an "open directors' meeting," the gathering was well attended. Outgoing President C. V. Sorenson, Northern Indiana Public Service Co., Hammond, delivered the keynote address. Other talks were made by V. C. Seiter, chairman, Accounting Committee; Guy Johnson, chairman, Research Committee; H. G. Horstman, chairman, Technical Committee; and George O. Stewart, chairman, Sales Committee.

Dig deeper and send more dollars into the fight. Increase your payroll savings for War Bonds.

1943 Gas Measurement Course Cancelled

THE Southwestern Gas Measurement Short Course, heretofore held annually in April at the University of Oklahoma, has been cancelled for 1943 due to war conditions. Held under the direction of a committee including representatives of the College of Engineering of the University of Oklahoma, Oklahoma Utilities Association, Natural Gas Section of the American Gas Association, Natural Gasoline Association of America, State Commissions, and equipment companies, the course has been a valuable institution for the dissemination of information on all phases of gas measurement.

The General Committee, headed by Max Watson, Canadian River Gas Co., Amarillo, Texas, will function as in the past and publish reports submitted by the Committee for the Study of Practical Methods.

Obituaries

LINFORD S. STILES

LINFORD S. STILES, who as construction engineer for The Brooklyn Union Gas Company, supervised the building of many company properties, died May 5.

Mr. Stiles was 70 years of age and had been with the company since 1903. He entered Brooklyn Union as a draftsman. His energy, ability and experience enabled him to rise rapidly and in January, 1908, he was made construction engineer.

His biggest undertaking was the planning and supervision of the construction of Greenpoint Works. Other important company properties which he designed and saw to completion were the tunnel under the Gowanus Canal at Citizens Works, the gas engine installation at Newtown Pumping Station and the coalhandling equipment at the old Nassau Works. In his spare time he perfected a number of inventions which are in wide use.

He was a former president of the Brooklyn Engineers Club and the Kings County Chapter of Licensed Professional Engineers of New York. He was a member of the American Society of Mechanical Engineers and the American Society of Civil Engineers.

DR. HAMILTON PERKINS CADY

DR. HAMILTON PERKINS CADY, who identified the first natural helium in a Kansas gas well and aided in the development of other helium producers, died May 26. He was sixty-eight years old.

HANS VITTINGHOFF

HANS VITTINGHOFF, a consulting engineer for the Stone & Webster Engineering Corporation, New York, N. Y., with which he had been associated since 1909, died May 26 after an illness of two months. His age was 59.

Mr. Vittinghoff was born in Germany, came to this country when he was 12 years old and was graduated from the Stevens Institute of Technology in 1907. He was an active member of the American Gas Association and served on committees of the Technical Section. He also was a member of the American Institute of Chemical Engineers and the American Society of Mechanical Engineers. His work was largely in the chemical and public utility fields.

He leaves a widow, Mrs. Doris Erlenkotter Vittinghoff, and a son, Rupert Vittinghoff of Toledo, Ohio.

WILLIAM G. RUDD

WILLIAM G. RUDD, vice-president of the Peoples Gas, Light & Coke Company, Chicago, died of a heart attack May 26 while attending a business conference in the Atlantic Hotel. His age was 55.

Mr. Rudd started with the company thirty-eight years ago as a laborer and soon entered the operating end of the business. He was elected vice-president in 1927. Mr. Rudd, who was born in Philadelphia, made his home in Oak Park, Ill.

He leaves a widow, Ernestine.

EDWY L. TAYLOR

EDWY L. TAYLOR, retired railroad executive who was a member of the Public Utilities Commission of Connecticut from 1931 to 1942, died May 17 at the age of 63.

Born in Albany, N. Y., he was graduated from Yale in 1901 and then taught for four years at the Sheffield Scientific School. He was employed by the New York Central Railroad for six years and afterward was affiliated with the New York, New Haven and Hartford Railroad for 17 years. In the first World War he was in France for a year with the A.E.F. and at his death held the rank of Lieutenant Colonel in the Reserve.

Mr. Taylor was a member of the American Gas Association.

ANGUS MACARTHUR

ANGUS MacARTHUR, 54, vice-president and director of Koppers Company, Pittsburgh, and general manager of its Gas and Coke division, with headquarters in New York, died suddenly May 9 in his home at Old Greenwich, Conn., following a heart attack.

He had been associated with Koppers since 1920 when he joined the organization as operating engineer. He was promoted to his latest position in 1933, and was transferred from Pittsburgh to New York in 1939.

Previous to joining the Koppers organization he was engaged in engineering work for firms in Superior, Wisc., and Chicago, and was associated with the Minneapolis Gas Light Company and the Laclede Gas Light Company, St. Louis.

Mr. MacArthur was born in Duluth, Minn., Nov. 29, 1888 and was graduated from the University of Wisconsin in 1911 with a degree in Mechanical Engineering.

He was president and a director of The Connecticut Coke Company, New Haven, Conn., and the Philadelphia Coke Company, Philadelphia; vice-president and trustee of Eastern Gas and Fuel Associates, Boston; and director of the Montreal Coke and Manufacturing Company, Montreal, Can., and the Brooklyn Borough Gas Company, Brooklyn, N. Y.

CONVENTION CALENDAR

JUNE

June 2-3 **Edison Electric Institute**
New York.

5 **American Management Association**
Hotel Pennsylvania, New York.

7-9 **National Office Management Association**
Detroit, Mich.

11 **Mid-West Gas Association, Regional Meeting**
St. Paul Hotel, St. Paul, Minn.

OCTOBER

Oct. 5-7 **National Safety Congress**
Hotel Sherman, Chicago, Ill.

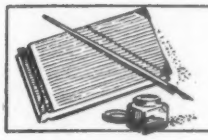
11-13 **American Gas Association, Annual Meeting**
Jefferson Hotel, St. Louis, Mo.

NOVEMBER

Nov. 29-Dec. 3 **American Society of Mechanical Engineers**
New York.

DECEMBER

Dec. 6-7 **National Association of Manufacturers**
Waldorf Astoria, New York.



Accounting SECTION

Wartime Accounting Practice Reviewed at Gas and Electric Industry Conference

MAKING a frontal attack on a variety of accounting problems which have been commanding attention since the war began, more than 350 gas and electric industry accountants met at the Netherland-Plaza, Cincinnati, Ohio, April 27-28. Held under the sponsorship of the American Gas Association and the Edison Electric Institute, it was one of the most successful meetings in recent years.

Reversing the usual order of procedure, the general session and seven luncheon meetings were held on the second day while the entire first day of the conference was devoted to discussions of the following groups: Customer Activities, General Accounting, Taxation, and Purchasing, Stores and Transportation. Leaders of both the gas and electric industries alternated in conducting the sessions.

L. A. Mayo, The Connecticut Light & Power Co., Hartford, chairman of the A. G. A. Accounting Section, and F. B. Flahive, Columbia Gas & Electric System, New York, chairman of the E. E. I. Accounting Executive Committee, presided at the general session.

In welcoming the delegates to Cincinnati, H. C. Blackwell, president, The Cincinnati Gas & Electric Co., gave his views on depreciation, maintenance and public relations. He predicted that many changes in accounting procedure dictated by the war would be a permanent part of the post-war set-up.

The urgency of the manpower problem was emphasized by Robert C. Goodwin, regional director, War Manpower Commission, who said that by the end of the year "three out of every ten workers in the country must be women." Estimating that 4,300,000 men would be added to the armed forces in 1943 and 2,100,000 more workers absorbed by essential war industries, Mr. Goodwin declared that about one-half of this total of 6,400,000 persons must be secured by further reduction of employment in less essential industries. "There are at present about 27,000,000 workers in these so-called less essential activities," he said, "and about 12 per cent of that total must be transferred to war work if we are to meet our needs."

C. W. Kellogg, president, Edison Electric Institute, in pointing out the common problems faced by the gas and electric industries, said that the thing that differentiates utilities from other industrial concerns is "the preponderant amount of fixed capital applied to the gross earnings to carry on our business." He told how ignorance of proper accounting methods in times past had created difficulties and called attention to the enormous variations in general price levels which occur during the life of any utility property, thus complicating its accounting problems.

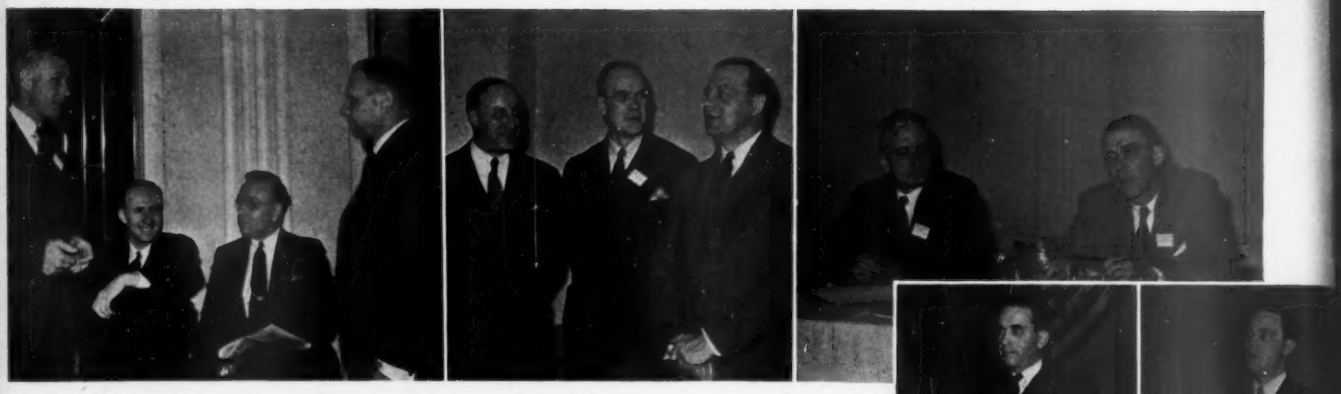
L. A. Mayo, Hartford (right), and O. H. Ritenour, Washington, chairman and vice-chairman respectively, A. G. A. Accounting Section

Commenting on accounting changes resulting from the war, Arthur F. Bridge, president, American Gas Association, referred particularly to the wide-spread adoption of multi-monthly meter reading. Mr. Bridge advocated bi-monthly reading with no estimated interim billing as the best solution to this problem. "Where there is considerable variation in monthly unit consumption, as for instance, where gas is utilized for space heating, it has been found impracticable to estimate the interim month's consumption with an acceptable degree of accuracy," he said. Multi-monthly reading and billing in some form will come into general use and will remain after the war, he predicted. Further discussion of this subject took place at the group and luncheon meetings.

Recent trends in utility regulations were ably summarized by W. A. Dougherty,

Left—A. A. Cullman, New York, addressing the General Accounting Group Meeting. Seated at the table are, left to right: H. H. Scaff, New York; R. E. Hull, Shreveport, and L. V. Watkins, New York

Below—View of the General Session during the Cincinnati conference



Left to right: A. A. Cullman, New York; H. E. Cliff, Newark; E. N. Keller, Philadelphia; J. J. Natale, Philadelphia; L. L. Dyer, Dallas; H. C. Hasbrouck, New York; H. L. Gruehn, Baltimore; A. J. Newman, New York, and R. M. Dodds, New York

Standard Oil Co. of New Jersey, New York, N. Y., who noted that the influence of Federal regulation is expanding. He discussed acts of the Federal Power Commission, paying particular attention to the Hope Natural Gas Company case.

Charles E. Kohlhepp, chief, Inventory Control Branch, Office of War Utilities, War Production Board, spoke on "Inventories and Surplus Materials," giving a clear-cut explanation of order U-1 which makes it compulsory for utilities to sell surplus materials. He indicated that it was hoped to get the Office of Price Administration to adopt a special price directive to cover utility excess materials and concluded with a plea for the industry to cooperate with the government in making available all critical materials it can spare.

The general session closed with a talk by Mr. Flahive who has served as chairman of the Accounting Sections of both the gas and electric associations.

CUSTOMER ACTIVITIES GROUP

Presiding: E. F. Embree, New Haven Gas Light Co., New Haven, Conn., H. R. Flanegan, Philadelphia Electric Co., Philadelphia, Pa.

In his opening remarks, Chairman Embree called attention to the "Customer Activities Group Report" which summarized replies to a comprehensive questionnaire covering emergency changes in customer accounting, collections, and customer relations procedures. This report was distributed to the delegates and a large part of the meeting was devoted to a discussion of it.

Opening the discussion, J. J. Natale, Philadelphia Electric Company, reviewed the trends in customer accounting as they were revealed in the replies of 89 companies who answered the questionnaire. His summary, giving information on meter reading and billing changes, will be published in full in the next issue of the MONTHLY.

The case for bi-monthly billing was presented in valuable detail by R. B. Tulpin, Central Illinois Public Service Company, Springfield, Ill., whose company had adopted this system. Influencing the company's decision to install bi-monthly billing was the fact that its 200,000 electric and gas customers are located in 498 communities and adjacent rural territories and approximately 264,000 automobile miles per annum were utilized in reading meters. A major objective was the desire to select a permanent system and this, according to

J. J. Natale, Philadelphia, and Harold F. Quad, Newark

Mr. Tulpin, ruled out "such expensive operations as rendering estimated bills at regular intervals."

First installation of the bi-monthly scheme by Central Illinois was made during September and October of 1942 and results were so gratifying that the system is being extended throughout the company's territory. "Public acceptance," Mr. Tulpin said, "exceeded all hopes and expectations and the greatest obstacle to the adoption of bi-monthly meter reading and billing now appears to exist solely in our own minds as a result of years of thinking in terms of a monthly billing period."

As to economies, Mr. Tulpin reported that they consist "principally of reductions in automobile car miles of approximately 30%, substantial reductions in operating and office personnel, a reduction of 30 to 40% in the use of billing machines and other mechanical office equipment, as well as

F. B. Flahive, New York, chairman, E.E.I. Accounting Executive Committee; J. A. Williams, Syracuse; H. J. La Wall, Philadelphia; and B. S. Rodey, New York

Right—Gas and electric industry accountants gather in the lobby following a meeting

Customer Activities Group Meeting

R. L. McVey, Denver, and H. C. Blackwell, Cincinnati

substantial reductions in such items of expense as postage, bill delivery, and cost of bills."

The morning session concluded with a Customer Accounting Forum led by J. H. W. Roper, Washington Gas Light Co., Washington, D. C. Considerable discussion centered on a method of estimating house heating bills which was described by H. J. Johnson, Michigan Consolidated Gas Co., Detroit. This plan is operated on a degree-day basis utilizing the average consumption for the entire year, and has proved most satisfactory.

Customer Collections Forum

Mr. Flanegan presided at the afternoon meeting which opened with a Customer Collections Forum led by H. F. Quad, Public Service Electric & Gas Co., Newark, N. J., who presented some of the highlights of the questionnaire report mentioned above. Among the points brought out in Mr. Quad's report were the following:

Of 78 companies replying to this phase of the questionnaire, 22 companies reported changes in policy on deposits; 15 in the direction of a continued liberalized policy, and seven toward a more strict interpretation, in line with the following thinking: "Deposits are now required from all new customers and from old customers falling in arrears because of rapid movement of people in and out of territory and change in individual incomes."

Reduction of field collection coverage is almost universal yet collections in general have improved, Mr. Quad declared. This is an indication that more money is coming to payment points without solicitation, that manpower is decreasing, and that credit conditions in general are better. Some have eliminated full-time collectors and necessary calls are being handled by the service department; others are using meter readers for collections. Women cashiers are replacing men and office collection employees now include more women.

In some companies where the use of outside collection representatives had been a fixed method of operation for many years it was noted that reduction or elimination of house-to-house calls had little adverse effect. Additional mail and telephone treatment has been used more extensively and the service and operating departments are being used for necessary disconnection work.

Fifty-one companies reported that the same collection treatment is given to estimated or memo bills as is given to bills based on actual meter readings. Seventy companies use outside agencies for customers' convenience in the payment of bills.

Manpower Developments

Following Mr. Quad's presentation J. Gordon Ross, of Rochester, led the discussion on collection problems.

Turning to manpower developments, W. A. Kelly, Consolidated Gas Electric Light & Power Co. of Baltimore, opened the discussion on the "Lengthened Work Schedule." A six-day, 48-hour week was made effective in the Baltimore utility February 27. The first approach was to prepare an inventory of manpower and to maintain it on a current basis. This inventory was a breakdown of employees by occupational classification and, after a detailed study, the projection by such occupations of the number of employees needed on the lengthened work week.

While figures indicated a decrease in manpower of 16⅔% on the 48-hour week, the actual decrease was 12%, Mr. Kelly stated. He outlined the considerable planning and study required to reschedule the meter reading, billing, bookkeeping and collection routines, and urged companies contemplating this change to pay careful attention to gaining the cooperation of employees.

A comprehensive study of the utility manpower situation in Dayton, Ohio, was presented by K. E. Boyle, The Dayton Power & Light Company. Illustrating the problem to be solved, Mr. Boyle reported that in 1942 the commercial accounting department of his company had an employee turnover of 104%, divided as follows: collection department, 67.6%; customer accounting, 77.8%; and meter reading, 26.6%. In the three months' period ending January 1, 1943, the meter reading turnover was 87.5%.

To meet this situation, following the employment of high school boys as meter readers and other steps, the company on March 7 lengthened the work week to

General Accounting Group Meeting

Luncheon meeting of General Accounting Group

48 hours for men and 44 hours for women. With employees being paid time and a half for all work over 40 hours, Mr. Boyle said there was no adverse reaction to this change, on the contrary there was "a decided improvement in our employee attitude and morale due to the higher weekly income."

Reporting for the Detroit area, H. J. Johnson, Michigan Consolidated Gas Company, Detroit, said his company had long since given up the idea of getting new employees with a background of education, training and experience. Facing this situation, proper job training is paramount, he declared. Training and educational material "must combine both the 'how' and the 'why.' Merely training an employee how to perform a job is inclined to make him mechanical and eliminate the opportunity to apply judgment and common sense in the execution of his work." He recommended the use of specialists as instructors to instill "pride of accomplishment" and "pride of organization" into these new employees.

Introducing the Customer Relations Forum, G. A. Saas, Citizens Gas & Coke Utility, Indianapolis, referred to the customer as, in one sense, the forgotten individual. In many ways, accounting procedure affecting customers must follow war rules and regulations regardless of the effect on customer relations. Nevertheless, Mr. Saas advocated keeping the customer's viewpoint in mind at all times and doing everything possible to retain his goodwill. As an example of what could be done in this direction, he described a new appliance service policy just put into effect by the Indianapolis utility.

Further stressing the importance of keeping the customer's goodwill while making critical changes in customer accounting and collection work, Ohmer Ullery, The Ohio Fuel Gas Company, Columbus, said: "The type of service we give today will be of inestimable value after the war."

Post-War Observations

The Customer Activities Group meeting closed with some interesting post-war observations by E. N. Keller, Philadelphia Electric Company. Referring to radical developments in meter reading and billing functions, Mr. Keller pointed out that, as these "sprang from necessity and the labor situation, it is not safe to conclude that when the necessity passes they can be maintained. It is true that customer acceptance during this period of stress has been remarkably good, but again there is no assurance that when the crisis is over customers will not criticize short-cut plans."

Greater mechanization is an important factor in post-war planning, Mr. Keller said, and "we cannot expect the office machinery manufacturing companies to do a good job for us unless we can give them a preview of our expected needs." He recommended that the national associations form a group to develop customer accounting systems in use and "do some crystal gazing to determine where we are heading."

GENERAL ACCOUNTING GROUP

Presiding: R. E. Hull, United Gas Pipe Line Co., Shreveport, La., H. H. Scaff, Ebasco Services Inc., New York, N. Y., Leith V. Watkins, Panhandle Eastern Pipe Line Co., New York, N. Y.

The General Accounting Group meeting consisted largely of reports of special committees covering a variety of internal and external accounting problems. Since a number of the reports were statements of progress rather than final reports, they will not be summarized in this article.

Among the items included in the discussion were: Internal Reports, Internal Auditing, Reports to Regulatory Authorities, Protection and Preservation of Records, Amortization of War Facilities, Special Reserves for Post-War Adjustment, Streamlining of Uniform Systems of Accounts, Depreciation and Property Records.

Reserves for Post-War Adjustment

A stimulating report of the A. G. A.-E. E. I. Committee on Special Reserves for Post-War Adjustments was presented by the co-chairmen, A. A. Cullman, Columbia Engineering Corp., New York, and J. H. Lobban, Detroit Edison Company. The report contains interesting observations in respect to manpower, plant, earnings, inventories and receivables, but emphasized that plant is by far the most important item which must be considered in respect to reserves.

Outlining the problems to be met the committee said: "During the war period, because of governmental restrictions and shortage of materials, utilities are deferring much plant construction and, in some cases, maintenance which would normally be carried on and some facilities are continuing in operation which, because of wear and tear, obsolescence, and other causes, would normally be replaced. Some of the deferment is direct and some indirect, an instance of the latter being the delay until after the war in building new homes which will result in an acceleration of new extensions at a later date.

"On the other hand, considerable money has been expended for additional capacity for war purposes which would not normally have been required for many years and, in the case of extensions to war plants, temporary housing developments, and their appurtenances, might never have been built. . . . . Also during the war period, existing equipment has frequently been operated at a much higher than normal rate and, in the case of moving parts, such as generators and compressors, this accelerated operation may produce for this equipment a shortened life when measured in years."

The Committee on Protection and Preservation of Records, S. E. Campbell, Natural Gas Pipeline Co. of America, Chicago, and F. Heydecke, Public Service Electric & Gas Co., Newark, N. J., co-chairmen, presented an outline of a comprehensive plan for protecting records which is now being completed. Mr. Heydecke described the system used by his company.

Streamlining the uniform system of accounts was advocated by a committee headed by A. M. Hartogensis, Ebasco Services Inc., New York, and H. D. Borger, The Peoples Natural Gas Co., Pittsburgh. Reports to regulatory authorities were analyzed by W. G. Bourne, The Commonwealth & Southern Corp., New York, and E. K. Higley, Middle West Service Co., Chicago.

Other reports made to the conference included: Depreciation—H. C. Hasbrouck, New York, and H. L. Gruehn, Consolidated Gas Electric Light & Power Co. of Baltimore; Internal Reports—G. H. Bourne, The Commonwealth & Southern Corp., New York, and P. F. Leusch, The East Ohio Gas Co., Cleveland; Internal Auditing—W. D. Virtue, Public Service Co. of Colorado, Denver, and A. H. Schettler, Union Electric Co. of Missouri, St. Louis.

Replies to a questionnaire on utility plant accounting were summarized by the Property Records group, R. L. McVey, Public Service Co. of Colorado, Denver, and H. P. Taylor, Wisconsin Public Service Corp., Milwaukee, co-chairmen, leading the discussion. At the luncheon meeting the following day, Mr. Taylor reviewed the recent rulings handed down by the Federal Power Commission in regard to utility plant acquisition adjustments and utility plant adjustments accounts.

TAXATION GROUP

Presiding: R. M. Dodds, Ebasco Services Inc., New York, N. Y., A. J. Newman, Columbia Gas & Electric Corp., New York, N. Y.

Considerable discussion took place at this meeting relative to the possibility of utilities obtaining relief in connection with excess profits tax liabilities. This discussion centered around Section 722 of the Internal Revenue Code. Other topics which evoked lively comment were: Employer's deduction for retirement annuities; Surtax credit for public utility preferred dividends; Advantages and disadvantages of consolidated returns; and, Equity invested capital as to (1) basis of property paid-in stock, (2) accumulated earnings and profits.

PURCHASING, STORES AND TRANSPORTATION GROUP

Presiding: J. K. Brown, Michigan Consolidated Gas Co., Detroit, Mich., W. P. McArdle, Ebasco Services Inc., New York, N. Y.

This group's open floor discussions were dominated by the War Production Board's regulations and their effect on materials inventories, purchases, transportation, stores accounting, and salvage functions. Utilities order U-1 received particular attention and was thoroughly aired.

It was brought out at the meeting that companies represented, without exception, were extremely active in the salvage of materials both as a patriotic duty and an economic necessity. Many ingenious methods of stretching the life of critical materials were mentioned.

Gas Promotion and Sales During and After the War

By B. A. SEIPLE

Chairman, Residential Section, American Gas Association

B. A. Seiple

THE subject of "Gas Promotion and Sales During and After the War" has great latitude, but, more important, it is a subject that concerns everyone identified with the gas business and not alone those whose specific responsibilities deal with sales. To speak of gas promotion and sales during the war does not present a true impression of what the industry's viewpoint should be and is. Rather this subject could be termed the gas industry's contribution to the war effort and how we can do this and still keep in the minds of our customers the thought that gas, the fuel, is important to them, not only today but in the tomorrow to come.

Revenue Protection Department

The New Business and Sales Promotion Departments of gas companies have adjusted their work to such an extent that in the true sense they could, today, be well characterized as the Revenue Protection Department. We can do this through advertising, true, and right now I believe it well to speak of the very excellent advertising that has been carried on by the industry and individual companies, always pointing to the fact that gas can do it better.

We have recognized, through the restriction on sales of new products, the need for increasing the life of the present appliances in our customer's home. We have talked and acted on the care and use of present appliances. We have literally taken the Government's restrictive orders and by interpreting them in the proper light to our customers have actually created in the minds of these same customers a greater appreciation of gas. We all know that many of the worth while things in our daily lives are taken too much for granted and only when they are denied us do we begin to appreciate them. Customers by the thousands were placed in this position concerning gas by the application of Limitation Orders L-31 and L-174.

To some, the need for the application of these Orders might be taken as criticism of the planning which preceded the war. Whether this be a truth or not, we must recognize that gas, the fuel, has been and is playing an all-important part in the war effort and while we have not been able to meet domestic demands in all instances, we have not shirked in our responsibility to our Government.

Aside from the industry advertising, we have many and sundry local situations which need careful presentation and interpretation to our customers. We must never *tell* "no," we must *sell* "no" when a "no" becomes necessary. Our Home Service Departments, who have always been a customer goodwill builder apart from the other valued services which they have rendered the industry, accept a new role today in presenting the Government's nutrition program and of late dealing with the ration plan as relating to food and the preparation of food. Our customers will attach a new significance to their gas company if we render them this kind of service at this time when they need it badly. I am confident that everyone in the industry feels strongly that what we do and say today will bear a tremendous influence on what our customer acceptance of gas, the fuel, will be after the war.

Planning for Post-War Sales

Now, to deal with some of the gas promotion and sales after the war—post-war planning as it pertains to the gas sales field. We have every conceivable type of post-war planning in this country today, starting with the National Resources Planning Board and following through, perhaps, every industry in the country. Our industry has a Post-War Planning Committee, headed by Alexander Beebee of Rochester. This committee is organized to consider post-war planning, industry-wise. This Post-War Planning Committee has been broken down into four specific studies. First: Post-war purchasing power and potential markets. Second: Factors affecting the realization of the potential markets. Third: Engineering and economic aspects of our own ability to satisfy the potential market. Fourth: The effect of national planning and trends. Under the second group, there is a Subcommittee on Sales Policies.

Just what will or should be the sales policies of gas companies in our post-war world? From some men today in the gas industry comes an expressed wish that gas companies divest themselves of the appliance business. This has always been a most controversial subject, a subject in which each of you undoubtedly has a very firm and I am sure a definite opinion backed by many facts, irrespective of which belief you may have.

In the very early days of appliance merchandising by the gas companies, the only thought in the minds of gas company executives was that of building load and whether this department operated at a loss or not was of no concern. This thought alone contributed in a large measure to resulting complaints of dealers objecting to utility merchandising on the basis that the utility was selling at prices so low that a dealer could not compete.

Essence of Dealer Cooperation

The very essence of dealer cooperation revolves around affording the dealer an opportunity to compete with the utility company from a price and product standpoint and still earn a reasonable return. Some gas companies have already proved that the merchandising department can establish itself on the plane of a merchandiser, namely, that of making a profit from their sales, enjoy good dealer relations and build load at the same time. During this breathing spell in gas company merchandising, we should review most carefully the premise from which we start in the matter of company merchandising.

Whether the gas company should merchandise in the post-war days goes beyond the mere question of what we may like or dislike. It must be studied from the standpoint of whether there will be dealers who can or would accept the initiative. We do know that gas, the fuel, requires equipment in the customers' homes, commercial establishments and industries to burn this gas and if we are to attain a maximum use of our fuel, it can only be accomplished by the maximum amount of equipment in our customers' homes, commercial establishments and industries. Whatever course, this point must be foremost. This subject is being given very careful consideration and study by this Subcommittee.

Another phase of post-war sales activities deals with the matter of service—serv-

Presented at Annual Meeting, Pennsylvania Gas Association, Philadelphia, Pa., May 4, 1943.

ice to our customers' appliances. Because of a long established practice, many companies have always believed in free service. Does free service of appliances strengthen the opinions of our customers of the fuel or does it weaken it? Does free service make guarantees mean anything? These and many other phases of what constitutes the best possible service plan for the industry are being studied at great length.

What will our competition be in this post-war world? If we are to judge by the developments and refinements that all manufacturers are ready and willing to acknowledge have been brought about in this gigantic task of supplying ships, guns, planes and tanks to our Armed Forces, then we can look very definitely to a post-war sales program, competitively speaking, that will outstrip anything we have yet known. Are we going to try to meet this with plans and programs which we have worked with for so many years? What type of selling organization will be required? The type of selling organization for the gas industry in this post-war period should start with the BEST sales ability available, which ties in very closely with the matter of compensation, in that we should and must raise our sights and be prepared to pay well for a good job. Our sales organizations should be concerned with the quality rather than the quantity, which, unfortunately, too often in the past has been the guiding factor.

What sales training needs to be developed? Our sales training should be equal or better than that of any other industry and we should under no circumstances be content with starting a salesman by giving him a price book and a prospect list and with raised eyebrows say "You represent the gas company." He must thoroughly know his product and beyond that must fully understand the product to be used in the appliances which he is selling. In a word, he must not only know his appliances, but he must know his fuel. How to do this effectively in the shortest possible time after the war is among the answers which this committee hopes to have for your consideration.

Our gas industry can very definitely be certain that we are not going to survive if we trust to luck or indulge in wishful thinking. We must provide unified leadership that spells Certified Performance for gas, the fuel.

Visits Portland's Home Service Center

ALTHOUGH nutrition and food preservation were the chief reasons for her visit in Portland, Ore., May 19, Home Service Counselor Jessie McQueen of the American Gas Association, made no effort to conceal her interest in the great Kaiser shipyards.

In fact as soon as she was reminded by Rita Calhoun, Portland Gas & Coke Company home service director, that lunch box nutrition and nutrition-in-industry in general would be an ample excuse, the two of them were off for a whirlwind sight-seeing tour of the yards.

Highlight of Miss McQueen's hurried Portland schedule was inspection of Portland Gas & Coke Company's newly enlarged homemakers center which was "unveiled" that day. Miss McQueen praised the utility's home service facilities which, since Pearl Harbor, have given information on nutrition and food conservation to more than 25,000 persons.

Miss McQueen was guest of honor at a small luncheon at the University Club, given by Mrs. Calhoun. Other guests included Mrs. Ada Mayne, chairman of the Portland Nutrition Council (of which Mrs. Calhoun is also a member), Mrs. Sue Bert of the Red Cross, and the editors of the women's pages of the two daily newspapers.

Discussed at the luncheon were various problems concerning the home processing of foods and nutrition in general, Miss McQueen reporting on the recent food conservation conference she attended at Cornell University and summarizing information gathered on her trip to date.

Earlier in the day Miss McQueen conferred with Don Farmer, the gas company's superintendent of utilization; Robertson Cook, service engineer; D. S. Kelleway, laboratory engineer; A. O. Leech, commercial manager; and C. W. Steele, residential manager. Experiments with dehydration were described at the conference among other things.

Opening day for Portland Gas & Coke Company's newly enlarged homemakers information center coincided with a visit to Portland, Ore., by Jessie McQueen (right), home service counselor for the American Gas Association. Miss McQueen and Mrs. Ada Mayne (left), chairman of the Portland Nutrition Council, are shown inspecting the new center and congratulating Mrs. Rita Calhoun, the utility's home service director and also a member of the local council

Builders' Service Expert Retires

R. B. Mahn

ROBERT B. MAHN, engineering assistant, negotiations and complaints division, Service Inspection and Records Bureau, Consolidated Edison Company of New York, Inc., retired on May 31, after 33 years of service with the system companies. Mr. Mahn was a pioneer in contact work with architects and builders in New York in promoting adequate gas piping in all types of buildings.

Mr. Mahn joined the Consolidated Gas Company on February 1, 1910, and immediately undertook a long-range program of working with architects and all building groups in gaining recognition of the importance of proper gas service in new and in altered buildings. Mr. Mahn also played an important part in the program to have gas meters placed in basements rather than in apartment kitchens.

He was active in the architects' and builders' service work of the American Gas Association for many years. He served as a judge in an architect's small house contest in 1926, and helped to prepare gas service data for prize-winning plans. He prepared twelve bulletins on gas service for the American Institute of Architects, and in 1927 served as chairman of the Architect's and Builder's Service Committee of the American Gas Association.

Home Show Chairman

M. L. Lavorgna

THE 21st Annual Milwaukee Home Show was held at the Milwaukee Auditorium March 13 to March 21. M. L. Lavorgna, manager of Milwaukee sales for the L. J. Mueller Furnace Company, acted as vice-chairman of the Executive Committee and was appointed chairman of the 1944 Home Show.

While the exigencies of wartime conditions had their effect on the show, it was well attended and even greater interest was displayed than had been anticipated. The role of heating was given a new emphasis through the demonstration of the conversion of a single-family home to a two-unit dwelling.

Industrial & Commercial Gas SECTION

B. H. GARDNER, *Chairman*
CHARLES G. YOUNG, *Vice-Chairman*
EUGENE D. MILENER, *Secretary*

New Developments and Data on Immersion Tube Heating

By F. E. VANDAVEER

Assistant Director, American Gas Association Testing Laboratories

Fig. 1. Arrangement of equipment for thermal efficiency test. Measurement of flue gas temperature by indicating potentiometer shown at left, and sampling of combustion products for analysis at right

Fig. 2. Two full sized U-shaped gas immersion tubes and tanks used in this investigation

GAS-FIRED immersion tube heating has had remarkable growth in recent years. It is now employed over a wide temperature range and the tube principle has been extended from heating liquids to higher temperature furnace work with so-called "gas radiant tubes." Its uses are numerous, including such diversified applications as cooking and pasteurizing of foods, cleaning, pickling, heat treatment of metals, and soft metal melting. Verification of these statements may be obtained by a review of the past year's issues of *Industrial Gas*. Practically all carry illustrations of large and small installations and advertisements of manufacturers supplying such equipment. In spite of this rapid development and widespread usage, further expansion in such fields will be more and more dependent on scientific studies.

Anticipating a need for basic data, the American Gas Association Committee on Industrial Gas Research, with J. W. Batten, vice-president and general manager of the Michigan Consolidated Gas Company, as chairman, initiated a fundamental research project on immersion tube heating. It was assigned to the American Gas Association Testing Laboratories as Project No. 47, "Research in Gas Immersion Heater Design and Operation." At the last Industrial and Commercial Gas Conference in Pittsburgh in March, 1942, a preliminary report, including a technical discussion of principles of heating with immersion tubes, objectives of the project, and a working outline for its conduct, was presented. It is the purpose of this paper to review briefly, research completed during the past year.

Presented at A. G. A. War Conference on Industrial and Commercial Gas, Detroit, Mich., Mar. 11-12, 1943.

Immersion Tube Heating of Deep Fat Fryers

One of the most common, and probably the most widespread, applications of immersion tube heating is in deep fat fryers. Thousands of these units are in daily use not only for civilian purposes, but also for our armed forces. They are particularly popular in preparing French fried potatoes. To fortify and extend this general class of business against severe competition, methods for increasing speed of heating and faster production of fried foods than can be attained by present-day equipment must be developed. It has been stated that additional stack on the appliance would not be objectionable in attaining this accelerated rate of performance.

The initial series of studies was therefore devoted entirely to this application of gas immersion tube heating. For this work four contemporary models of deep fat fryers of different size and design and employing immersion tubes were secured. Tests for combustion, heating speed, burner and pilot operation, thermal efficiency, temperature of tube wall and of cooking oil at different levels, and noise of operation were conducted both on fryers as received from the manufacturers and after making numerous changes in input rating, stack height, and tube baffles. No changes were made in tube size or length as these factors were studied in connection with other types, sizes and designs. Results of this work have been presented in the form of a mimeographed progress report to the sponsoring committee and to the four cooperating manufacturers in Research Report No. 973, entitled "Gas Immersion Tube Heating of Deep Fat Fryers." The appliances studied, as well as the flue pipe and baffles employed, are shown in Fig. 3.

Experiments were conducted to determine heating speeds from a cold start with both cooking oil and water as heating mediums. Cooking oil was heated from room temperature through a rise of 300° F., while water

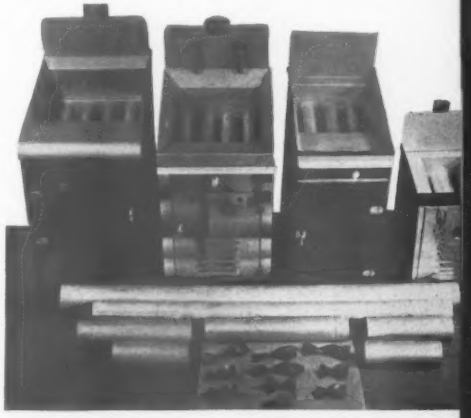


Fig. 3. Deep fat fryers used in investigation, showing gas immersion tubes. Different lengths of flue pipe and spiral baffles used with them in foreground

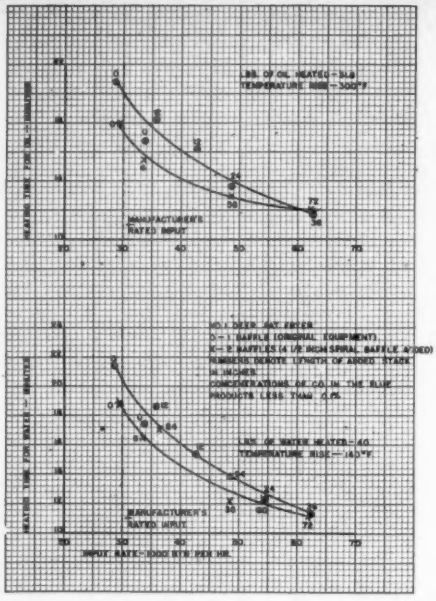


Fig. 4. Effect of gas input to fryer No. 1 on heating speed with one and two sections of spiral baffle with various stack heights

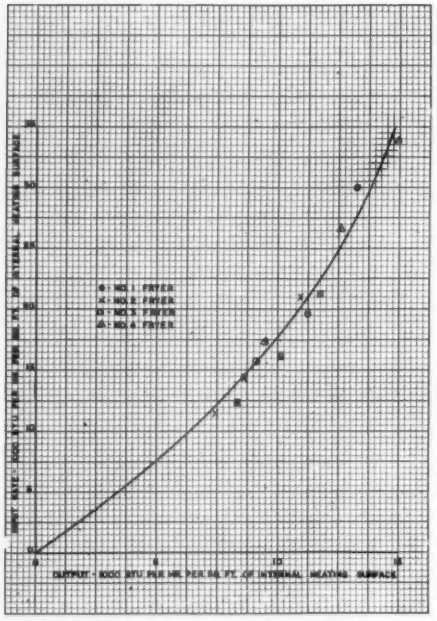


Fig. 5. Relation of heat output to input for four deep fat fryers studied

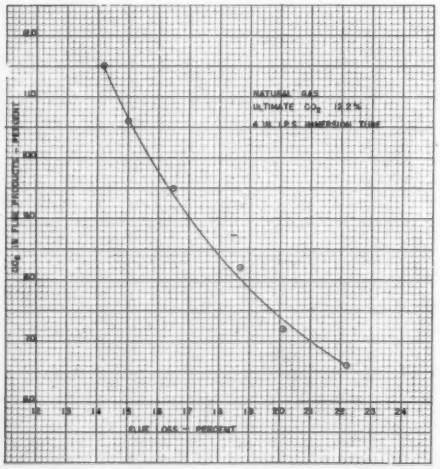


Fig. 6. Relation of flue loss in gas immersion tube heating to concentration of CO_2 in flue products

was heated through a temperature rise of 140° F. It was found possible to increase heating speeds on the average of 40.0% with water as a heating medium and 37.3% with cooking oil. A typical example of increase in heating speed of one of the deep fat fryers is illustrated by Fig. 4. This improved performance was accomplished with a relatively small increase in total gas consumption, the overall average being about 15.0%. Methods employed consisted of addition of internal tube baffles and increase in stack height and input rating as shown in Fig. 4. On the average, baffling was about doubled and gas input rate increased about 85%. No stack heights above 6 ft. were used. This increased performance was accomplished within limits of good combustion and indicates that faster heating speeds can be obtained on contemporary types of equipment without major changes in their design.

Increase in input rating by increase in vertical flue pipe section (if that is permissible) and proper balancing of baffle resistance in the immersion tube permitted considerable gain in speed at nominal sacrifice in thermal efficiency and only slight increase in gas consumed. At the extreme higher heating speeds attained, flue losses were in the neighborhood of 40%. Although such losses might be permitted where competitive gas and electric rates are favorable to gas (generally speaking natural gas), accompanying high flue gas temperatures would be too high to insure a reasonably long life of the appliance.

A series of three efficiency tests were made on each unit at high, low, and normal gas input ratings. A power burner was employed on one fryer to secure data over a wider range of input ratings than could be obtained with the atmospheric gas burner with which it was normally equipped. Assembly employed for efficiency tests, in which water evaporated in a given time was weighed, is shown in Fig. 1. Efficiency was found to decrease on an average by 12.5% (actual) with an 82.6% increase in input rating. Even though the efficiency decreased, there was a substantial increase in the output of each fryer. This is illustrated by Fig. 5, which is an average curve for all four fryers studied. This curve indicates that the output doubled for an increase in gas input of less than threefold within the range of inputs employed on all four fryers.

Five other conclusions based on data presented in Research Report No. 973 are listed below:

1. Employment of a high primary air, short flame atmospheric burner, or a power burner liberating its heat at tube entrance, would permit great increase in speed of heating and use of less gas during heating-up period with other performance features within acceptable limits. Test results on one fryer with improvised power burner confirm this statement, permitting a time of heating decrease from 16.4 to 8.9 min. and use of 500 B.t.u. less gas in the process.

2. More attention in design of fryers to distribution of temperatures along tube walls should permit less differential in temperature between walls and oil. On one fryer the wall temperature at one point of measurement at end of heating-up period was 170° F. higher than the oil temperature, whereas on another fryer this differential was only 50° F.

3. For good heat transfer it would be expected that tube wall temperatures should be as high, or higher, near burner end as at flue end. Two of the four fryers tested at a high input rating had highest wall temperatures at flue end.

4. To maintain oil in crumb receptacle below tubes at low temperatures, a distance of more than 1 in. between tube and bottom of compartment is needed. Fryers giving best results had a clearance of at least 2⅝ in.

5. Noise of operation of fryers was caused by inspiration of primary air and combustion. If this noise of about the same level as typewriter noise is objectionable, it is believed it could be corrected by proper design of burner or use of a simple muffler around the primary air inlet portion of burner.

Performance of Various Sizes of Tubes

Research is now in progress on performance of various sizes (1 to 4 in. diam.) of immersion tubes with power type burners. Eventually tubes of various pipe sizes up to 6 in. I.P.S. will be included in this study. Initial tests were made with U-shaped tubes from 1 to 4 in. I.P.S. sizes having three right angle turns immersed in tanks of water. A typical assembly is shown in Fig. 2. Two different lengths were used for each size—approximately 75 and 100 in. A second series of tests is now under way on straight lengths up to 14 ft. of different size tubes having only one 90° ell and a short riser pipe. Tank and pipe are shown in Fig. 10.

Efficiency tests consisting of evaporation of water in an open tank were first used as a measure of performance of the various immersion tubes. This method proved rather inaccurate so it was decided to substitute an accurate flue loss determination as a criterion of performance. To place all tests on a comparable basis, air for combustion was regulated to provide a CO_2 content in flue products of 10.0%. All tests were made on natural gas with an ultimate CO_2 content of 12.2%. The 10% figure was selected as it would provide relatively high efficiency and at the same time permit satisfactory combustion at high input rates.

Necessity of making comparative tests on different tubes at a definite CO_2 value is illustrated by Fig. 6. Flue losses increased rapidly with decrease of CO_2 in flue products. By maintaining the CO_2 constant a direct comparison of other variables can be made. Very consistent results were obtained

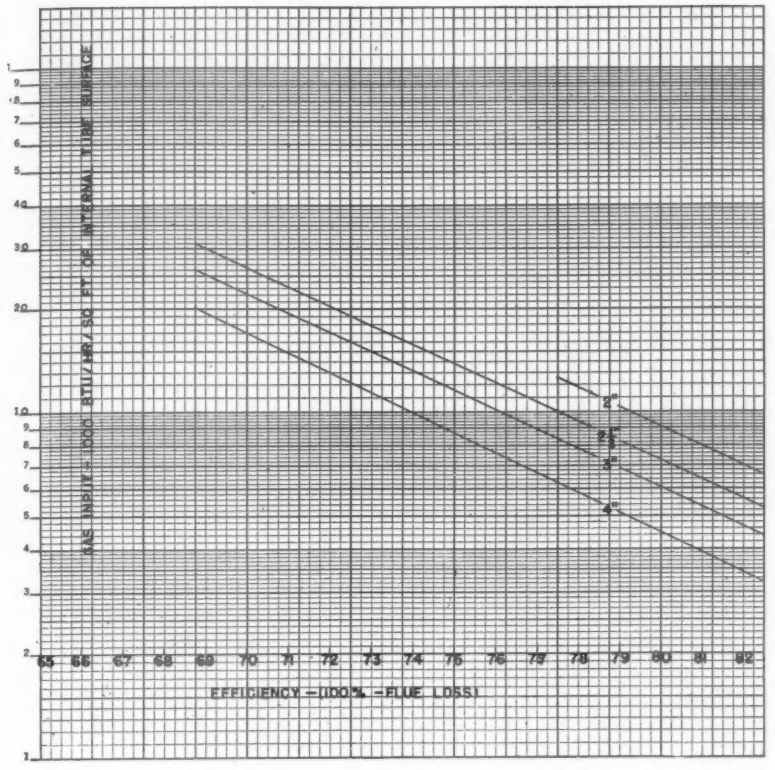


Fig. 7. Efficiencies of "U" shaped gas immersion tubes of 2 in. to 4 in. 1 P.S. diameters over a range of gas input ratings

by this method over a wide range of gas input ratings. When data were plotted on semi-logarithmic paper on the basis of B.t.u. input per square foot of internal tube surface against efficiency (100% — flue loss%), a series of parallel curves was obtained. These are shown in Fig. 7 for tube sizes on which data have been completed to date. These curves were plotted from data on all lengths of tubes used, as well as for different diameters of burners used in each tube. In other words, the rate of heat transfer on the basis of B.t.u. per hour per square foot of internal tube surface was found to be the same for either length of tube used (75 to 100 in.) and might justifiably be extended to other lengths within a range that would provide reasonable efficiency. Likewise, increasing the diameter of the flame with a larger burner did not increase performance as might be expected from closer proximity of flame to tube.

These results, as illustrated by Fig. 7, clearly show that for a given area of heating surface, smaller diameter tubes are much more efficient than those of larger diameter for transferring heat from flame to heating medium. For example, at an efficiency of 77.5%, a 4-in. tube had a gas input rate of 6,300 B.t.u. per hr. per sq.ft. of internal heating surface compared with 8,400, 10,000, and 12,800 for 3-, 2½-, and 2-in. tubes, respectively. No doubt, higher input rates will be found on still smaller sizes, but data on these are not yet completed.

Reference to Fig. 8 will demonstrate one reason for this situation. Flue gases travel 43.7 in. per sq.ft. of internal surface in a 1-in. diam. tube, 15 in. in a 3-in. tube, and 7½ in. in a 6-in. tube. An even more striking illustration of the performance of plain unbaffled U-shaped tubes of different diameters may be made by plotting efficiency against gas input per foot of tube length. On this basis all points fall close to an average curve as shown by Fig. 9. Nearly all data on 2- to 4-in. tubes are located within 2% (actual efficiency) of this average curve. In other words, a given length of 2-in. tube will transfer the same amount of heat as a 4-in. tube of the same length, provided the total gas input is within the range of operation of the smaller tube. It is, of course, possible to employ higher input ratings on larger tubes, but this must be done at the expense of economy of operation.

In an attempt to secure high rates of heat transfer with a high input rating, various combinations of tube sizes were employed. These consisted of a short length of 4-in. pipe connected to single and dual coils of both 2- and 1½-in. pipes. The rates of heat transfer with these units were approximately the same

(Continued on page 277)

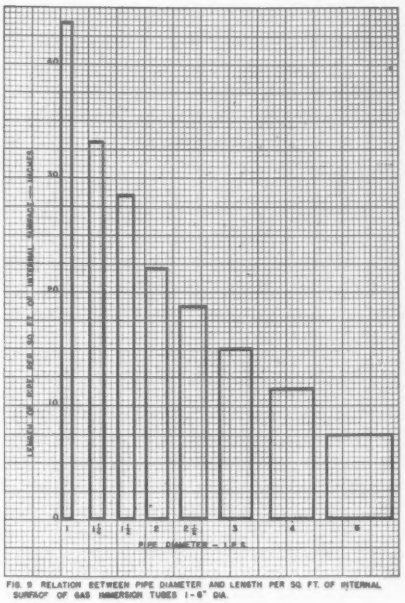


FIG. 8 RELATION BETWEEN PIPE DIAMETER AND LENGTH PER SQ. FT. OF INTERNAL SURFACE OF GAS IMMERSION TUBES 1-6" DIA.

Fig. 8. Relation between pipe diameter and length per sq.ft. of internal surface of gas immersion tubes 1-6" dia.

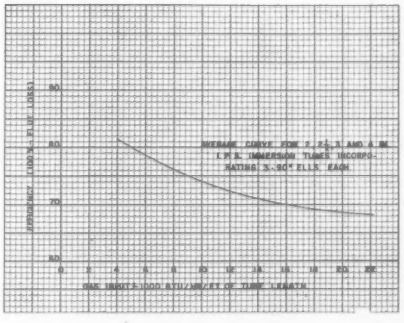


Fig. 9. Average curve showing that gas immersion tube diameter has no appreciable effect on heat transfer per unit length of tube

Fig. 10. Photograph of full-scale commercial sized 4-in. diameter 14-ft. long straight immersion tubes. Meters for measuring air and gas at front right

How To Do More with Less Is Keynote of Annual Distribution Conference

TAKING time out from their vital task of keeping record quantities of gas flowing to war industries and essential civilian activities, several hundred gas distribution engineers on April 29 and 30 took part in the annual Distribution Conference sponsored by the Technical Section of the American Gas Association. Representing most major gas distributing companies in this country and some Canadian companies, the delegates to the two-day meeting at the Netherland-Plaza, Cincinnati, Ohio, heard experts speak on the unprecedented problems facing their branch of the industry.

The conference was divided into two morning general sessions and four round-table luncheon meetings which extended throughout the afternoons. H. B. Andersen, The Philadelphia Gas Works Co., chairman of the Distribution Committee, presided at the morning sessions. Luncheon meetings were held as follows: Pipe Coatings and Corrosion—R. F. Hadley, Susquehanna Pipe Line Co., Philadelphia, chairman; Work on Customers' Premises—W. T. Collins, The Ohio Fuel Gas Co., Columbus, chairman; Meters and Metering—J. H. Collins, New Orleans Public Service Inc., chairman; and, Construction and Maintenance, T. H. Kendall, Equitable Gas Co., Pittsburgh, chairman.

H. B. Andersen, Philadelphia, chairman, Distribution Committee (right), and L. M. Harris, Paterson, N. J.

In his opening remarks, Chairman Andersen complimented the personnel of Distribution Committee on the part it had played not only in its own important field but also in guiding and assisting other A. G. A. committees representing the industry in connection with problems arising from governmental regulations. "We need no extended reminder of the important part which the Distribution Committee plays in our A. G. A. organization or of the important part which A. G. A. plays in the business and domestic life, of the United States." He recalled the first Distribution Conference in 1924 and paid tribute to the wisdom of its chairman, J. D. Von Maur, The Consumers' Gas Company of Toronto, who is known as the "father of the Distribution Committee."

The delegates were officially welcomed to Cincinnati by Mayor James G. Stewart whose ready wit and sketch of the city's history captivated his audience. H. C. Blackwell, president, Cincinnati Gas & Electric Co., extended his greetings and invited those present to visit the company's plant and offices. Mr. Blackwell was introduced by A. C. Cherry who, as vice-chairman of the Distribution Committee and representative of the host company, was doubly responsible for the meeting's success.

Meters and Maintenance

Arthur F. Bridge, president, American Gas Association, called the attention of the technical men to two major problems arising from war-created shortages, namely the repair of tin-cased meters and the question of deferred maintenance. Referring to difficulties preceding the present tin order, Mr. Bridge said that WPB's initial order "created some apprehension as it reduced the permissible tin content of solder to a point which many engineers felt would prove dangerous." After considerable experimentation and some controversy among the gas industry's meter experts, the Committee on War Activities recommended an alternate proposal—to discontinue repair of tin

Left to right: Alexander Forward, A. G. A. managing director; H. L. Gaidry, chairman, Technical Section; Arthur F. Bridge, A. G. A. president, and John H. Wolfe, Baltimore

At the Distribution Committee dinner preceding the Conference, left to right: D. P. Hartson, Pittsburgh; G. Hanshaw, New York; Chairman H. B. Andersen, Philadelphia; H. L. Gaidry, New Orleans, chairman, Technical Section; A. C. Cherry, Cincinnati, vice-chairman, Distribution Committee; and J. D. Von Maur, Toronto

Left to right: H. B. Andersen, Philadelphia, chairman, Distribution Committee; H. C. Blackwell, president, Cincinnati Gas & Electric Co., Cincinnati; A. C. Cherry, Cincinnati, vice-chairman, Distribution Committee; W. R. Fraser, Detroit; L. J. Eck, Minneapolis; F. S. Williams, Columbus, who addressed the Conference on "Women in Distribution Work," and W. T. Collins, Columbus, chairman, Luncheon Conference on "Work on Customers' Premises"

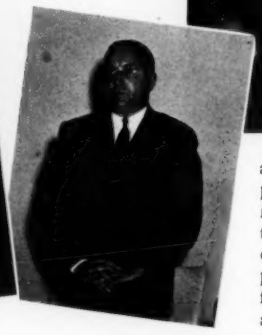
James G. Stewart, Mayor of Cincinnati; G. Edward Hitz, Poughkeepsie, explaining a new meter soldering technique during luncheon meeting; Major A. N. Horne, Cincinnati, introducing the "Big Inch" pipeline film; T. H. Kendall, Pittsburgh, Chairman, Luncheon Conference on Construction & Maintenance; J. T. Stine, New Orleans and L. K. Richey, Detroit, member, Distribution Committee

A. V. Smith, Philadelphia, author of "Cathodic Protection Interference," showing animated Donald Duck chart to illustrate his points; J. D. Von Maur, Toronto, who, as first chairman of the Distribution Committee, gained the distinction of being the "Daddy of the Conference"; Charles F. Turner, Cleveland, vice-chairman, Technical Section; H. R. Redington, Pittsburgh; and F. A. Lydecker, Newark

George B. McComb, New York; F. A. Hough, Los Angeles; H. G. Horstman, Indianapolis, member, Distribution Committee; J. M. Pickford, Hammond, member, Distribution Committee; R. F. Hadley, Philadelphia, chairman, Luncheon Conference on "Pipe Coatings and Corrosion" and former Beal Medal winner for his work on anaerobic corrosion; and M. C. Miller, N. Y.

Right—Frank A. Engel, Elizabeth, member, Distribution Committee, and D. S. Bittinger, Washington, whose paper appeared in the May MONTHLY

Below—F. Heinlein, Cincinnati, author of "Motor Vehicles at the Present Time," and J. H. Collins, chairman, Luncheon Conference on "Meters and Metering" New Orleans



meters—which regulation, with some modification, is now effective.

"The first revision of the order prohibiting tin meter repairs contained certain defects"; Mr. Bridge pointed out, "which, in the latest amendment effective April 26, have been eliminated with an added provision permitting unlimited repairs if made wholly with reclaimed tin." This is a most satisfactory solution, he said, "since the order effects the maximum possible saving of tin while avoiding the potential hazards of the procedure prescribed in the initial order."

Calling for concerted action on the question of deferred maintenance, Mr. Bridge said that, the principal issues involve accounting and taxation but "the facts can only be determined by engineers." He described the problem as "lack of manpower and materials causing deferment of normal repairs in our industry generally, of sufficient magnitude to justify the accumulation of reserves which would enable us to resume maintenance at an accelerated or 'catch-up' rate after the war." He recommended collaboration with the Accounting Section in seeking a solution to this problem.

Alexander Forward, managing director, American Gas Association, praised "the ingenuity and constructive fidelity with which the distribution men have attempted and accomplished the impossible. In many instances they are delivering gas for war industries, for Army and Navy operations and for essential civilian services beyond the capacities of their systems." They have been made responsible, he said, "for getting the last ounce of pressure and the last foot of gas into the war service of our country, and at the same time get along with less and less materials and machinery."

Mr. Forward called attention to the part the Distribution Committees played in studies of maintenance of service under possible enemy attack. "We know and read of the experiments conducted by many of our companies for the protection of mains and services and for rapid repair and restoration of service in case of damage." He referred to Chairman Andersen as "a pioneer in developing operating procedure for shutting off gas from broken mains pending the arrival of repair gangs."

With the aid of animated illustrations, A. V. Smith, consulting engineer, 1616 Pennsylvania Ave., Philadelphia, Pa., presented a valuable paper on "Cathodic Protection Interference." Mr. Smith's paper brings under one heading the most important of the many factors governing the relation of cathodic protection on one structure to another unprotected structure. It deals, therefore, with cathodic interference, and not necessarily with cathodic protection as related to the protection of a pipe line. A simple explanation is given of the effect of anodes, with diagrams explaining the effects and also some actual data for tests made to show the effects of cathodic interference and how such problems should be handled.

Mr. Smith concluded: "Cathodic protection cannot be installed on any one structure in a city network if a remote anode is to be used, for such an installation will produce cathodic interference. Outside of the city networks where the separation between the pipe lines is such that a remote anode may be used with a minimum effect on the foreign structure, cathodic interference may be eliminated by a properly designed residual bond."

Women in Distribution Work

The Thursday morning meeting closed with an interesting survey of "Women in Distribution Work" by Frank S. Williams, The Ohio Fuel Gas Co., Columbus. After pointing out the necessity for hiring women during the war, he described the manner in which they are being utilized in distribution operations in the Columbus company which has 102,000 domestic gas meters. Not only are women being used in billing, customer accounting and credit work but they are reading and repairing meters, servicing appliances, and working in the laboratories.

In training servicewomen, Mr. Williams said, "they start at the regular apprentice wage and are given from four to six weeks of concentrated training in our shop. For several more weeks, they ride around with an experienced girl and then they are sent out alone. At the moment we are using them exclusively on range, water heater and refrigerator adjustments, and high bill complaints where central-heating is not involved. There is no question but what they could also handle turn-ons and turn-offs and it is our intention to use them in this capacity whenever the necessity arises." Customer reaction has been most favorable, he reported.

With Vice-Chairman Cherry presiding, the Friday morning meeting opened with a panel discussion on emergency problems. L. M. Harris, Public Service Electric & Gas Co., Paterson, N. J., led off with a discussion of servicing which brought out a cross-section of measures taken to keep customers satisfied despite wartime shortages and restrictions. One delegate reported that his company was getting away from the specialist type of serviceman and was instructing employees on all types of appliances.

Charles F. Turner, The East Ohio Gas Co., Cleveland, and vice-chairman, Technical Section, introduced the subject of Personnel with a description of how men were being shifted to different jobs and women employed to bridge the manpower shortage. It was the concensus of those present that proper training programs could do much to make up for the lack of experienced workers.

Discussion of substitute materials by T. J. Kendall, Equitable Gas Co., Pittsburgh, centered around tests on fiber conduit designed to replace metal pipe. These tests to date have proved entirely unsatisfactory but it is hoped to develop other substitute material which will be of practical use.

Toronto Coordinating Plan

The important work of the Toronto Public Utilities Coordinating Committee was described fully by Mr. Von Maur. This committee, consisting of representatives of the telephone, electric and gas companies, water works, sewer and bridge departments, has its own set of City maps on which are shown all the underground structures, as well as the street surface dimensions. The maps are made on a scale of 20 feet to the inch with the cross-sections on a scale of 10 feet to the inch. Standard locations for future installations have been adopted and permits to use other than these locations are granted only after the new line has been approved by the committee.

The work of making the actual surveys of surface conditions is done by the city, Mr. Von Maur reported. The maps, showing the street dimensions, etc., are then sent to each utility and the locations of its underground structures are added. After each utility has added its respective structures, the final map is completed under the direction of the City's assistant engineer who acts as chairman of the committee. Each utility colors its particular structures in accordance with the committee's adopted plan. The cost of the work is divided equally among the four utilities and the City.

All questions which in any way affect

(Continued on page 277)

Utility Fleet Operators Analyze Wartime Transportation Problems

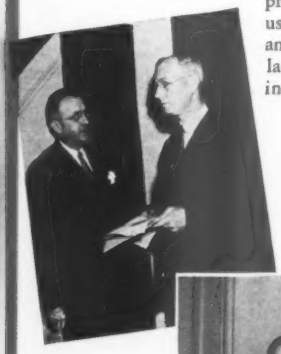
APPROXIMATELY 100 fleet operators representing a large segment of gas and electric utility transportation systems in the United States took part in the third annual conference of the American Gas Association's Committee on the Operation of Public Utility Motor Vehicles held at the Hotel Pennsylvania, New York, N. Y., May 4. Practical operating and maintenance problems, including training of personnel, and the application of the Government's tire inspection program were thoroughly aired at the conference, which preceded the annual meeting of the Society of Automotive Engineers on May 5 and 6.

Linn Edsall, Philadelphia Electric Company, Philadelphia, and E. W. Jahn, Consolidated Gas, Electric Light and Power Company of Baltimore, chairman and vice-chairman respectively of the Committee on Operation of Public Utility Motor Vehicles, presided at the morning session. A. A. Cullman, Columbia Engineering Corp., New York, conducted a valuable panel discussion during the afternoon.

Conveying the Association's greetings to the delegates, John W. West, Jr., assistant managing director, American Gas Association, paid tribute to the outstanding work of the motor vehicle committee in making a maximum contribution to winning the war with a minimum dislocation of essential services to war industry and civilian groups. "The resourcefulness and ingenuity which gas company fleet operators have shown in meeting problems of curtailed use, reduced mileage and government regulations, have been most inspiring and have contributed substantially toward the Government's program for conserving critical materials, fuels and manpower," Mr. West said.

Frank R. Archibald, National Carbon Company, New York, N. Y., presented a progress report on SAE-ODT Project 17 "Standard Practice Instructions" prepared by a committee under the chairmanship of J. Willard Lord, The Atlantic Refining Co., Philadelphia. Emphasizing the vital consequence of trained maintenance personnel, Mr. Willard outlined this concerted industry standardization project which is designed to accomplish three things: serve as a training medium for maintenance men; serve as an "on the job" reference for mechanics; and provide a standardized filing system to bring together instructions of various manufacturers. In the ensuing discussion Jean Y. Ray, Virginia Electric and Power Co., Richmond, and others urged support of the project.

Right—Linn Edsall, chairman, Motor Vehicle Committee. Below—Members of the committee, left to right, seated: Vice-Chairman E. W. Jahn, and Chairman Edsall. Standing: B. D. Connor, S. G. Page, Past Chairman Jean Y. Ray, and Alan A. Cullman. (H. A. Peterson present but not in the picture)



Fred Heinlein, Cincinnati, and Alan A. Cullman, chairman of the Panel Discussion

Chairman Edsall called attention to the paper on "Motor Vehicle Operations at the Present Time," presented by Fred Heinlein, The Cincinnati Gas & Electric Company, at the Distribution Conference, terming it as an excellent summary of the transportation picture.

The morning session closed with a discussion by D. K. Wilson, New York Power & Light Corporation, Albany, of a preliminary report on SAE-ODT Steering Maintenance Project 25 prepared by B. S. Snowden, chairman of the Steering Maintenance Committee. Pointing out that steering maintenance is of utmost importance from maintenance, economy and safety angles, the report declares that "the ability to recognize steering misalignment is more important than the ability to correct it, since the routine for correction is fairly well established."

Stressing the effect on tires, Mr. Wilson said that badly adjusted or misaligned steering mechanisms "do more to grind tires into powder than any other tire-wearing factor." He described inspection and maintenance procedure, listed the most common steering complaints, and specified the items to be checked after receiving such complaints. Mr. Wilson concluded with a description of various types

Lee A. Brown, head, Tire Inspection Section, Office of Price Administration, Washington, and E. L. Kost, regional tire examiner, OPA, New York. At right is E. W. Jahn, Baltimore, vice-chairman, Motor Vehicle Committee

of testing equipment available, giving the advantages and disadvantages of each. Lively discussion of steering problems followed this report.

Highlight of the conference was the appearance of Lee A. Brown, head of the Tire Inspection Section, Office of Price Administration, Washington, D. C., who opened the afternoon meeting with a clearcut explanation of the OPA tire inspection program, and answered all questions frankly and fully. His office employs 175 tire examiners, recruited from the tire industry, who instruct inspectors in 105,000 official tire inspection stations throughout the country in the proper procedure of tire inspection as outlined in the pocket-size Revised Tire Inspector's Manual.

Pointing out that the nation's largest stockpile of rubber continues to be the tires on 32,000,000 motor vehicles, Mr. Brown urged the operators to be vigilant in conserving tires on their automotive fleets. There is only one-fifth the number of tires available for vehicles now as compared with 1941, he said, and in the few months ahead "there will be available only some 5,000,000 used tires, plus about 7,000,000 new tires." Also, the wanted sizes in new tires are being depleted and only odds and ends in sizes will be left, he indicated.

Tire Recapping Quota Removed

Mr. Brown announced that quota restrictions on the number of certificates for truck tire recapping were removed May 1. This action was taken to conserve rubber by providing recapping as soon as needed, rather than risk ruin of some casings that might be driven beyond the recapping point because of lack of quota. For the same reason, Mr. Brown said, OPA withdrew the rule that certificates for recappings or inner tubes could be issued for B eligible trucks only after the 25th of the month, and then only if quota remained after applications for A eligible vehicles were satisfied.

F. R. Archibald, New York, addressing the Motor Vehicle Conference on "Standard Practice Instructions"

Procedure for getting certificates for truck-type recapping is not changed. A recommendation for the service still must be obtained from an official OPA tire inspector before application is made to a Local Board.

Reporting that shortage of trucking parts has taken more than 6 per cent of the trucks out of service, Mr. Brown declared that the shortage was growing worse. Parts which have been most difficult to obtain, he said, include transmission and differential gears, crank shafts, piston rings, bearings, welding rods, gaskets and electrical equipment. Inventories are reported as being 24% less than a year ago. Mr. Brown also referred to the shortage of skilled repair men as a matter of grave concern.

Further discussion of the parts situation took place during the panel discussion when Mr. Ray advocated establishing a system of exchanging spare parts among utilities in the same geographical region. However, he stated that the Office of Defense Transportation felt that the situation will improve after July 1 as far as the supply of functional parts is concerned.

Under the able guidance of Chairman Cullman the forum, which occupied the remainder of the afternoon session, developed a wealth of practical wartime operating experience. Among the topics discussed were: use of solvents and detergent oils; use of a recording device (Servis recorder); ball joint failures in steering mechanisms; lubrication; experience with steam jennies; benefits of standardization and simplification in design, manufacturing and parts servicing; wear on front axles of the Elliott reverse type; exchanging parts; and supplying mechanics and inspectors with tools and cover-alls. Acting as discussion leaders were Messrs. Jahn, Ray, Edsall, Heinlein, and J. R. North, Commonwealth and Southern Corp., Jackson, Michigan.

Joint Production and Chemical Conference

THE joint Production and Chemical Committee Conference, sponsored by the Technical Section, American Gas Association, was held May 24 and 25 at the Hotel Pennsylvania, New York, after this issue of the MONTHLY had gone to press. A complete report, together with publication of some of the outstanding conference papers, will appear in the July-August issue.

Bound sets of papers presented at this meeting and the Distribution Conference are available and will be sent on request to A. G. A. Headquarters.

Short Cut Procedures FOR ANALYSES AND TESTS

Compiled by the Chemical Subcommittee on Analyses and Tests
Dr. Channing W. Wilson, Chairman

CONTINUOUS NITRIC OXIDE TEST BOARD

H. EMMONS, Ass't Chief Chemist,
Boston Consolidated Gas Company

IN our manufacturing plant, we found it necessary to have a nitric oxide test board in operation from 8 to 72 hours. This was done using the Shaw test board with special absorbing tubes. We have selected three types of absorbers for this work. A Widmer spiral absorber, a common glass column filled with glass helices, and a modified Shaw absorber.

The modified Shaw absorber is similar to the design of the standard Shaw absorber except that the capacity has been increased from 20 milliliters of solution to 80 milliliters of solution. This absorber can be used for as long as seventy-two hours on a gas having a nitric oxide content of from 0.01 to 0.5 grams/MMCF. The higher the concentration of nitric oxide, the shorter the period that the test can be made.

The Widmer spiral and column using glass helices is used on gas of high nitric oxide concentrations. Concentrations range from 0.5 to 50 grams of nitric oxide per MMCF. These absorbers are connected to the Shaw test board in the following manner:

A two liter aspirator bottle having an Elliot seal so as to maintain a constant head, is used to store the absorbing reagent which may be either Greiss reagent or Metaphenylene diamine. This reservoir is mounted above the test board. Connected to the outlet of the bottle is an orifice, calibrated to yield 40 milliliters of solution per hour. This is connected to a side arm open tube which is joined by a stopper to the absorber. The side arm on the tube serves as a gas outlet. On the lower end of the absorber, a side arm tube having an overflow seal is attached. The side arm of this tube is attached to the reaction or delay bottle on the Shaw test board. A flask is located below the overflow seal to collect the reagent passing through the absorber.

These absorbers have been used in our plant for over three years with excellent results.

Further details may be obtained by contacting our plant laboratory.

DISTRIBUTION CONFERENCE

(Continued from page 274)

street work are discussed by the Toronto committee, Mr. Von Maur said, adding that the system has worked satisfactorily for the past ten years. He emphasized the value of such maps, particularly during the war emergency.

D. S. Bittinger, Washington Gas Light Co., Washington, D. C., presented a valuable paper entitled "Teaching Customers to Do Things for Themselves as an Aid to the War Effort." This paper was published in full in the last issue of the MONTHLY.

Motor vehicle operations during the emergency were ably summarized by Fred Heinlein, The Cincinnati Gas & Electric Co., and member of the A. G. A. Motor Vehicles Committee. Pointing out that his company reduced mileage in the gas distribution department by 18,516 miles or 27.35% and number of units by 15 or 13%, he suggested that a complete survey be made of all automotive equipment in use.

Mr. Heinlein urged the distribution men to explore the possibility of using lighter equipment in place of heavy duty equipment, especially where other units are available in a fleet. He noted that in his company the large 1½ ton meter truck had been replaced with a ¾ ton meter truck and a 3½ ton material hauling truck with a 1½ ton unit; also a ½ ton meter truck and ½ ton panel body appliance service truck had been replaced with coupes equipped with sliding trays. He also recommended interchange with other group companies of a list of idle automotive equipment. A particularly useful appendage to Mr. Heinlein's report was a compilation of the latest information on OPA and ODT regulations covering motor vehicle operations.

The concluding feature of the program was the showing of the dramatic pipe line film, "The Story of 'Big Inch,'" illustrating the construction of the world's largest oil pipe line. It was presented by The Barrett Division of Allied Chemical & Dye Corp. and introduced by Major A. N. Horne, vice-president and assistant general manager of War Emergency Pipelines, Inc., whose company directed the construction work.

In his introduction, Major Horne said that "Big Inch" has a capacity of 300,000 barrels of oil per day or the equivalent of 25,000 tank cars in shuttle service between Texas and the East. Pipe-fill and working stocks for the 1,400-mile line require 4,000,000 barrels of oil, which is pumped through the line at a speed of 108 miles per day. Each joint of pipe, 40 feet in length, weighed nearly two tons. The thickness of the steel is ⅜ inch, and the line will operate at a pressure of approximately 725 pounds per square inch. Coal-tar enamel and asbestos felt were used to protect the line from corrosion.

The luncheon conferences held each afternoon of the conference brought out a wide variety of distribution operating experience. These informal gatherings have been voted the most valuable feature of these conferences.

IMMERSION TUBE HEATING

(Continued from page 271)

as those obtained with the smaller size of pipe employed in them. In addition, gas input rates were very little higher than could be obtained if gas were fired directly into the smaller tubes. However, with still smaller sizes of tubes, a short section of larger diameter pipe in the combustion zone would probably be desirable to improve combustion. Such an arrangement may show up to even greater advantage with atmospheric type burners. These preliminary trends will be investigated further during the course of future work which will include studies of tube design for power, atmospheric, and induced draft type burners. In addition, a thorough study will be made on the effect of internal baffles on immersion tube efficiency. Results of initial tests indicate that baffles will increase the rate of heat transfer considerably on larger diameter tubes. For example, the use of a 1¼ in. I.P.S. pipe baffle with closed ends located concentrically in a 4-in. immersion tube increased the rate of heat transfer to approximately that obtained with a plain 2-in. tube.

Measurement of noise on various size tubes was made with noise level meters. As tube size was increased from 2½ to 4 in., noise increased from 80 to 111 decibels. The higher level was particularly objectionable, approaching that of an airplane engine and propeller at 10 ft. (120 db.). Threshold of feeling is 130 db. Some attempts have been made, with fair success, to reduce this noise by using sound wave interference, attaching a pipe of proper length at center of tube. This method has been quite successful in reducing gas furnace noise, but requires further study before an adequate solution to reduction of noise in immersion tubes may be accomplished.

It seems appropriate to point out in conclusion that the objectives of this research project, to provide fundamental data of a handbook nature which can be used in solving existing problems and in pointing the way for improvement of utilization efficiencies and enlargement of heating capacities, are being attained. Some of the fundamental data on deep fat fryers, U-tubes 1 to 4 in. in diam., and large straight tubes with power burners have been presented herein. Results obtained have been more productive of facts which may be used in improve-

ment of utilization efficiencies and increased heating capacities than was originally anticipated. Further research will include both larger and smaller size tubes, atmospheric and induced draft burners, methods for decreasing noise of operation, and other related subjects of most direct value to the industrial utilization of gas fuel. When the experimental work is completed a technical bulletin including all results will be published. This will be supplemented and interpreted in papers and articles for publication in scientific and trade association magazines.

EFFECT OF WAR ORDERS ON NATURAL GAS TRANSMISSION

(Continued from page 245)

produce, either directly or indirectly, a part or all of the gas needed for their systems, it is conceivable that if the drilling of wells is too drastically limited, the supplies available for some systems may fall short. In other cases where transmission companies purchase their supplies in the field, producers may find themselves unable to meet demands made upon them, with the result that the transmission company may not be able to meet its market requirements. Also, there is the problem of how to deal with the owners of royalties and minerals, especially those having interests in proven areas and who are subjected to drainage. Presumably this order will be administered so as to permit the drilling of sufficient wells to produce needed gas supplies and also arrange some measure of protection to the owners of leases.

At this time it does not appear beneficial to try and recite additional problems that many individuals and companies say they have had under the Orders issued by PAW and WPB. Depending upon individual circumstances possibly no two would agree whether P-98-B or U-1 was the more difficult to comply with. It is realized also, that many may have been disappointed in requests and applications made for improvements and alterations that were considered of merit and necessary. But after all we must be realistic; we are involved in a war that at this moment has all the appearances of being long and deadly. Unless somewhat biased, I believe a majority would suggest that both of the Federal Agencies discussed here, handling the massive and complicated amount of work that they have been faced with, have done an excellent job.

The real problem for future thought, however, is the material and supply situation. Those difficulties that we have had in the past, or even those that are immediately being dealt with, may be mild compared with those that are ahead, in one year, two years, or so long as the war continues. Naturally, the Army, Navy and Merchant Marine requirements must be met first, and on schedule, and their needs for materials in critical categories must be fulfilled. As the war continues, it is highly possible that even more acute shortages will develop in certain types of materials now used in construction, maintenance, and repair, such as certain high grade steels for forgings, steel castings, bronze and babbit for bearings (the latter with its high percentage of tin), copper for cables, wire, motors, tubing, and other critical materials needed for the repair and maintenance of heat exchangers, pumps, meters, generating equipment, and other items.

Disregarding past problems except as a means of enlightenment and experience for meeting those of the future, the conservation and total use of the materials available or those which may be acquired in the future should be of first concern whether they be of a so called critical class or not. Those who have machine shop facilities of their own have a distinct opportunity for conserving materials; and for those not so equipped, there are still probably some competent concerns with shop and foundry equipment that will be glad to do repair and reclamation work.

Many materials after original and secondary uses can be turned down or built up. Rotating and reciprocating shafts can be metallized and finished, and simplification, substitution, and adaptation of materials and equipment that are available and readily obtainable can be practiced, in order that a system be not appreciably handicapped.

Many specialized tools and equipment which heretofore have been considered essential can be replaced by equipment and materials of non-critical nature. There are available today many obtainable commercial items, which can be adapted and used in place of specially designed equipment, which is difficult to procure or obtain repair parts for.

Favors Salvage Engineer

Another thought is that of appointing a salvage engineer or possibly a salvage committee within an organization, preferably men who have some metallurgical as well as practical experience, to pass on all materials considered to be beyond further use before being scheduled for scrap sale. Such a man or committee may promote new ideas and ways of re-using materials once thought to have no value, and in addition may more quickly determine whether there are possibilities of re-use so that if no benefits can be realized, such materials may then promptly find their way into the country's scrap and salvage program.

It is recognized, of course, that in the past a number of transmission companies have been doing things of this nature, but a greater effect of such conservation will be felt when others do so.

In concluding, it has in the past been a general impression of other nations throughout the world that the American people are inherently wasteful. Maybe this has been somewhat true, but now we find ourselves in a position that compels us to observe and practice strict economy. I am certain that every transmission man will look ahead toward the elimination of wasteful practices, whatsoever and wherever they may be and by conscientious and diligent application to conservation and resourcefulness, problems with relation to PAW and WPB can be reduced, thereby allowing those agencies more opportunity in which to apply their time and effort to the needs of the Armed Forces. By exercising the ingenuity and resourcefulness that we are supposed to possess, many future problems may be avoided, and in so assisting these Agencies of the Federal government, we in turn are doing our part in helping toward the winning of this war.

EFFECT OF WAR ORDERS ON NATURAL GAS DISTRIBUTION

(Continued from page 247)

down the amounts of gas used for house heating. Naturally, it has been beneficial in dollar saving and added comfort to the customers.

The appeals to our customers to "use gas wisely" and to "save gas by insulation" will be continued for the duration. Our customers will indeed be fortunate if they are not required to do more than has been asked of them to date. The objective of L-31 is to lower the demand for natural gas, particularly on peak days. We believe that the appeals to the public to lower the use of gas through existing appliances and the appeal to save gas by home insulation have been effective. Some areas report that radio appeals, when in trouble on peak days, have brought a considerable relief from domestic demands. We know that insulation has helped.

In addition to these voluntary savings we have found that in many cases the industrial customers, even when working on war production, can make a contribution through greater care in utilization and higher effectiveness. Sometimes new burner design is needed. In some cases furnaces were designed for alternate fuels and gas is being used at a disadvantage. A rebuilding of the furnace may accomplish a considerable saving and speed output. To bring these possibilities to the attention of our industrial customers, we have published a small pamphlet entitled, "To Help Speed Victory—Use It Wisely." We feel that there are real potential savings in gas to be obtained by many of our industrial customers.

Effect on Maintenance, Repair and Operation of Natural Gas Distribution System

Reference is made again to Preference Rating Order P-46 which was issued in order to conserve the use of critical material and also to enable utilities to obtain minimum amounts of material necessary in the proper maintenance, repair and operation of the distribution system. In 1942, the amount of materials permitted for these purposes was limited on the basis of the amount used in 1940. Generally speaking, 1940 was a year in which considerable work of this nature was done and in our opinion this basis did not represent any particular hardship. Late in 1942, this basis was reduced to 60% of the amount used in 1940 and on February 24, 1943 upon is-

suance of U-1, superseding P-46, a new base quota was established limiting withdrawal to one-third of the dollar value, class by class, withdrawn during the last nine months of 1942. This basis establishes repair and maintenance at the average rate of actual work performed during the last three quarters of 1942.

During 1942, we, as well as the natural gas industry in general, kept repair and maintenance at a minimum, consistent with safe operations, in accordance with the spirit and intent of Preference Rating Order P-46. In our own distribution system, there were some specific locations at which work of this nature had been planned in 1942, but was postponed in order to conserve critical material. We have no way of knowing how much longer this work can be postponed without influencing the efficiency and safety of the system.

The curtailment of this phase of construction in 1942 reduces the amount of material which can be used in 1943 and it is not hard for us to visualize a condition in which we, as well as other natural gas utilities, will be forced to apply for relief from U-1, as it now stands, before 1943 is over. I would like to make it clear that this is not to be construed as a criticism of U-1 as it is my understanding that the use of 1942 as a base was considered the most practical manner of reducing materials to a reasonable level under present conditions. And for industry in general, with a higher level of operations in 1942 as compared with 1940, this basis will probably work very well. However, in natural gas distribution, for the reasons just mentioned, this basis of determining amount of withdrawal appears to establish maintenance and repair at less than pre-war levels despite increased operations. Undoubtedly, in cases where this causes hardship, relief will be granted.

Supplementary Order M-43-b which was issued on January 26, 1943, restricting the use of tin in certain gas meters also has a definite effect on maintenance and repair in a natural gas distribution system. This order prohibits the use of tin in the adjustment, internal repair, or resealing of any tin-cased gas meter having a rated capacity of less than 300 cu.ft. per hour except a meter which is found not to be accurate within a range of plus or minus 4% or a meter which has not been previously repaired internally for 12 years or more. The extent of the effect of this order, will, in most cases, depend upon the attitude of the regulatory body governing the operation of the natural gas utility. The Pennsylvania commission has temporarily amended the rules and regulations to conform with the 4% error and has waived the removal of meters for periodic testing during the period up to and including December 31, 1944.

As a result of Supplementary Order M-43-b, it has been possible to discontinue the normal removal for periodic tests of nearly all of the tin case meters in use at present. Many natural gas companies have on their lines, large numbers of iron case meters, the testing and repairing of which requires but a minimum of solder. Between the work required on tin case meters brought about by other than periodic changes, as well as certain work which needs to be done on iron meters from time to time, we hope that it will be possible for our company to retain in the meter shop a sufficient number of experienced, skilled meter men to permit the proper maintenance of our meters. A large number of our meter shop repairmen have been or will be moved to other work in the distribution system to replace men who have been called into service. There are, of course, some cases where because of the age and general physical condition of the employee, that this cannot be done. It is considered a very wise plan to keep a nucleus of a meter shop organization at work in the meter shop and to hold as many of the experienced meter men who are no longer needed on meter work, within the distribution organization so that they may be recalled when it is necessary to resume the ordinary practice of testing meters periodically. Because of the Limitation Orders, meter manufacturing companies are not going to be in a position to furnish new meters when needed. This makes it necessary to continue to repair many meters beyond what may have previously been considered the economic life of the meter.

It is encouraging to see the satisfactory way in which our customers have accepted limitations to service brought about by the orders affecting our industry. Violations where occurring have been few and in most cases due to lack of information regarding the orders, rather than an attempt to circumvent them.

When we consider the magnitude of the national war undertaking and its effect on every family and every person it is surprising that our work has not been more seriously affected. I feel very sure that the War Production Board and other governmental agencies having to do with our industry will receive our continued support and cooperation.

EFFECT OF WAR ORDERS ON NATURAL GAS PRODUCTION

(Continued from page 248)

ing of gas wells be permitted when such a showing of need has been made.

It is interesting, if not significant, in connection with this discussion to note the differences which apparently exist between the status of the oil industry and the status of the natural gas industry. On the basis of recently published information, the oil industry is confronted with the necessity for the discovery of new reserves and for this reason the emphasis in drilling on the part of the oil industry probably will be placed upon wildcat drilling. At the same time it appears that there is less necessity for additional drilling at this time in oil fields where development has already proceeded to the point that desired production rates may be attained.

In respect to the natural gas industry generally it appears that the present requirements for a drilling program may be nearly the reverse of the requirements which appear to confront the oil industry. The nat-

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INDUSTRIAL AND COMMERCIAL GAS ADVERTISING FOR JUNE

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full page advertisements will appear in the trade and business magazines listed below during the month of June. These advertisements are prepared in cooperation with the Committee on National Advertising as a part of the industry's national advertising campaign.

MAGAZINE	THEME
	Metals Industry
THE IRON AGE (June 24) METALS AND ALLOYS	To "keep 'em rolling" in the air calls for *GAS* heat-treating.
INDUSTRIAL HEATING	The American "Blitz." *GAS* and the proper heat-treating of *parts* set the pace for ultimate victory in the field.
	Ceramic Industry
GLASS INDUSTRY	And now . . . Glass Precision Gages . . . of course, made with *GAS!*
	Hotel Field
HOTEL MANAGEMENT	Green Help? It's less of a problem with *GAS* equipment.
	Hospital Field
MODERN HOSPITAL	Now the dietitian has army rank! And the *GAS* industry pays tribute to this great profession for its role in good nutrition.

ural gas industry generally may be in position to defer for a considerable length of time a major portion of exploratory drilling programs, but no natural gas system may defer the drilling that happens to be required to currently maintain delivery capacity if service is to be maintained.

These general conclusions as to the relative status of the oil industry and the natural gas industry in respect to the requirements of their respective drilling programs may be erroneous and they are certainly only general, being inappropriately applied to unusual situations. Rational conclusions may be reached in regard to matters related to this discussion only upon the basis of a full study of complete and reliable information. It is probably a proper statement to say that such information is now or shortly will be in the hands of the PAW as a result of the efforts of the Petroleum Industry Committees. The efforts of these committees should have the result of providing full and reliable information for the use of the Petroleum Administrator, which information should serve the purpose, among others, of providing a basis for a determination of proper well drilling programs.

One of the most significant trends in present production practice in the natural gas industry is the increasing use of pooling or unitizing of leases to form drilling blocks. This trend is appropriately mentioned in this discussion because of its importance to the industry and because of the fact that one effect of war conditions in the industry has been to encourage, if not to require, the use of pooling or unitizing in the handling of leases. It probably was not a primary objective of the WPB and of PAW to encourage or require unitization of leases in the drilling program of the natural gas industry, but the trend in unitization practice has been an inevitable result of the application of rules designed to reduce the amount of drilling.

There are many questions and angles, legal and otherwise, which arise in connection with this trend toward unitization. One such question is whether the use of unitization should be mandatory upon lease and royalty owners at least in cases where unitization is required to permit suitable drilling and development of a field. Some people in the industry hold the idea that sufficient inducement toward unitization is provided by the mere requirement that wells must be drilled with wider spacing when they are drilled without the benefit of exceptions. Others hold the idea that the practical requirement to unitize must be implemented with compulsion to protect cooperative owners from other owners, usually in the minority, who refuse to pool or unitize for purposes of field development and operation. In consideration of this question and others which arise in connection with unitization, it appears that a healthy condition would be promoted in the industry if the status of the matter of unitization could be clarified by rule and regulation or by law rather than to depend upon nature taking its course toward an unguided solution of the question.

It is interesting to speculate about the progress which will be made in the future as a result of the current impetus applied by circumstances to the use of unitization. Perhaps no wild use of the imagination is required to visualize the time when all oil and gas fields will be developed and operated on a unit basis and there are those in the industry who will maintain that such a condition will prove to be optimum at least from the standpoint of the physical aspects of the problem.

TECHNICAL ADVISORY COMMITTEES

(Continued from page 248)

Air Conditioning Association; A.S.H. & V.E. Technical Advisory Committee on Heavy Duty Air Heating Furnaces; A.G.A. E.M. Committee on CP Requirements of Central Heating Equipment.

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